CITATION REPORT List of articles citing

A review of biochar as a low-cost adsorbent for aqueous heavy metal removal

DOI: 10.1080/10643389.2015.1096880 Critical Reviews in Environmental Science and Technology, 2016, 46, 406-433.

Source: https://exaly.com/paper-pdf/65724959/citation-report.pdf

Version: 2024-04-03

This report has been generated based on the citations recorded by exaly.com for the above article. For the latest version of this publication list, visit the link given above.

The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

#	Paper IF	Citations
834	Sorption of lead and methylene blue onto hickory biochars from different pyrolysis temperatures: Importance of physicochemical properties. 2016 , 37, 261-267	90
833	Sorption of copper(II) from synthetic oil sands process-affected water (OSPW) by pine sawdust biochars: effects of pyrolysis temperature and steam activation. 2016 , 16, 2081-2089	18
832	High efficiency and selectivity of MgFe-LDH modified wheat-straw biochar in the removal of nitrate from aqueous solutions. 2016 , 63, 312-317	95
831	Phosphorus Removal from Aqueous Solution by Pre- or Post-Modified Biochars Derived from Agricultural Residues. 2016 , 227, 1	25
830	Amending the seedling bed of eggplant with biochar can further immobilize Cd in contaminated soils. 2016 , 572, 626-633	26
829	Biochar improves agro-environmental aspects of pig slurry compost as a substrate for crops with energy and remediation uses. 2016 , 94, 97-106	23
828	Carbon-Based Adsorbents for Postcombustion CO2 Capture: A Critical Review. 2016 , 50, 7276-89	282
827	Removal of levofloxacin from aqueous solution using rice-husk and wood-chip biochars. 2016 , 150, 694-701	75
826	Biosorption of cadmium by a lipid extraction residue of lipid-rich microalgae. 2016 , 6, 20051-20057	13
825	Removal of ammonium from aqueous solutions using alkali-modified biochars. 2016 , 28, 26-32	25
824	Biochar-supported carbon nanotube and graphene oxide nanocomposites for Pb(II) and Cd(II) removal. 2016 , 6, 24314-24319	61
823	Highly efficient adsorption of Cr(VI) from aqueous solution by Fe3+ impregnated biochar. 2017, 38, 815-825	14
822	Effect of bamboo and rice straw biochars on the mobility and redistribution of heavy metals (Cd, Cu, Pb and Zn) in contaminated soil. 2017 , 186, 285-292	364
821	Heavy metal immobilization and microbial community abundance by vegetable waste and pine cone biochar of agricultural soils. 2017 , 174, 593-603	184
820	Structural characteristics of biochar-graphene nanosheet composites and their adsorption performance for phthalic acid esters. 2017 , 319, 9-20	123
819	Slow pyrolyzed biochars from crop residues for soil metal(loid) immobilization and microbial community abundance in contaminated agricultural soils. 2017 , 177, 157-166	37
818	Biochar provides a safe and value-added solution for hyperaccumulating plant disposal: A case study of Phytolacca acinosa Roxb. (Phytolaccaceae). 2017 , 178, 59-64	41

(2017-2017)

817	Roles of Phosphoric Acid in Biochar Formation: Synchronously Improving Carbon Retention and Sorption Capacity. 2017 , 46, 393-401	70
816	The benefic effect induced by biochar on soil erosion and nutrient loss of slopping land under natural rainfall conditions in central China. 2017 , 185, 145-150	65
815	Adsorption of p-nitrophenols (PNP) on microalgal biochar: Analysis of high adsorption capacity and mechanism. 2017 , 244, 1456-1464	89
814	Reducing the bioavailability and leaching potential of lead in contaminated water hyacinth biomass by phosphate-assisted pyrolysis. 2017 , 241, 908-914	18
813	Biochar properties and eco-friendly applications for climate change mitigation, waste management, and wastewater treatment: A review. 2017 , 79, 255-273	312
812	Indispensable role of biochar-inherent mineral constituents in its environmental applications: A review. 2017 , 241, 887-899	170
811	Pyrogenic carbon and its role in contaminant immobilization in soils. <i>Critical Reviews in Environmental Science and Technology</i> , 2017 , 47, 795-876	59
810	Biosorption of Co (II) from aqueous solution using algal biochar: Kinetics and isotherm studies. 2017 , 244, 1465-1469	78
809	Characteristics and mechanisms of nickel adsorption on biochars produced from wheat straw pellets and rice husk. 2017 , 24, 12809-12819	101
808	Biochar soil amendment on alleviation of drought and salt stress in plants: a critical review. 2017 , 24, 12700-12712	217
807	Efficient removal of lead from solution by celery-derived biochars rich in alkaline minerals. 2017 , 235, 185-192	83
806	Mechanisms of metal sorption by biochars: Biochar characteristics and modifications. 2017 , 178, 466-478	784
805	Enhanced removal of Cd(II) from aqueous solution using CaCO3 nanoparticle modified sewage sludge biochar. 2017 , 7, 16238-16243	60
804	Synthesis optimization of oil palm empty fruit bunch and rice husk biochars for removal of imazapic and imazapyr herbicides. 2017 , 193, 201-210	22
803	Effect of co-application of nano-zero valent iron and biochar on the total and freely dissolved polycyclic aromatic hydrocarbons removal and toxicity of contaminated soils. 2017 , 168, 1467-1476	31
802	Valorisation of post-sorption materials: Opportunities, strategies, and challenges. 2017 , 242, 35-58	59
801	Preparation and characterization of a novel nanocomposite of clinoptilolite/maghemite/chitosan/urea for manganese removal from aqueous solution. 2017 , 34, 2886-2900	30
800	Recent advances in nanoscale-metal assisted biochar derived from waste biomass used for heavy metals removal. 2017 , 246, 123-134	97

799	Sorption of heavy metal ions onto crayfish shell biochar: Effect of pyrolysis temperature, pH and ionic strength. 2017 , 80, 114-121	73
798	Recycling of rice straw through pyrolysis and its adsorption behaviors for Cu and Zn ions in aqueous solution. 2017 , 533, 330-337	59
797	Synthesis of novel magnesium ferrite (MgFeO)/biochar magnetic composites and its adsorption behavior for phosphate in aqueous solutions. 2017 , 245, 751-759	137
796	Biochar for volatile organic compound (VOC) removal: Sorption performance and governing mechanisms. 2017 , 245, 606-614	123
795	Effects of copyrolysis of sludge with calcium carbonate and calcium hydrogen phosphate on chemical stability of carbon and release of toxic elements in the resultant biochars. 2017 , 189, 76-85	29
794	Biochar for composting improvement and contaminants reduction. A review. 2017 , 246, 193-202	187
793	Continuous metal biosorption applied to industrial effluents: a comparative study using an agricultural by-product and a marine alga. 2017 , 76, 1	10
792	Removal of Copper (II) by Biochar Mediated by Dissolved Organic Matter. 2017 , 7, 7091	20
791	Redox-Active Oxygen-Containing Functional Groups in Activated Carbon Facilitate Microbial Reduction of Ferrihydrite. 2017 , 51, 9709-9717	62
790	Recent developments on algal biochar production and characterization. 2017 , 246, 2-11	201
789	Sustainable Utilization of Marine Algae Biomass for Environmental Bioremediation. 2017, 179-217	O
788	Black Carbon (Biochar) In Water/Soil Environments: Molecular Structure, Sorption, Stability, and Potential Risk. 2017 , 51, 13517-13532	267
787	A review of biochar-based catalysts for chemical synthesis, biofuel production, and pollution control. 2017 , 246, 254-270	300
786	The improvement of multi-contaminated sandy loam soil chemical and biological properties by the biochar, wood ash, and humic substances amendments. 2017 , 229, 516-524	27
785	Recent bioreduction of hexavalent chromium in wastewater treatment: A review. 2017 , 55, 1-20	224
7 ⁸ 4	Metal immobilization by sludge-derived biochar: roles of mineral oxides and carbonized organic compartment. 2017 , 39, 379-389	21
783	Waste-art-paper biochar as an effective sorbent for recovery of aqueous Pb(II) into value-added PbO nanoparticles. 2017 , 308, 863-871	39
782	Advances and future directions of biochar characterization methods and applications. <i>Critical Reviews in Environmental Science and Technology</i> , 2017 , 47, 2275-2330	1 128

(2018-2017)

781	Use of Biochar as an Amendment for Remediation of Heavy Metal-Contaminated Soils: Prospects and Challenges. 2017 , 27, 991-1014	103
780	Chemical activation of hickory and peanut hull hydrochars for removal of lead and methylene blue from aqueous solutions. 2017 , 29, 197-204	40
779	Biochar Mitigates Salinity Stress in Plants. 2017 , 153-182	3
778	Recent advances in engineered biochar productions and applications. <i>Critical Reviews in Environmental Science and Technology</i> , 2017 , 47, 2158-2207	202
777	Biochar. 2017 ,	4
776	Removal of Zinc from Aqueous Solution by Optimized Oil Palm Empty Fruit Bunches Biochar as Low Cost Adsorbent. 2017 , 2017, 7914714	11
775	Adsorption behaviors of atrazine and Cr(III) onto different activated carbons in single and co-solute systems. 2018 , 329, 207-216	38
774	Improvement in productivity, nutritional quality, and antioxidative defense mechanisms of sunflower (Helianthus annuus L.) and maize (Zea mays L.) in nickel contaminated soil amended with different biochar and zeolite ratios. 2018 , 218, 256-270	50
773	Insight into Multiple and Multilevel Structures of Biochars and Their Potential Environmental Applications: A Critical Review. 2018 , 52, 5027-5047	349
772	Role of non-ion surfactants in three-dimensional ordered porous biomass carbon foam derived from the liquefied eucalyptus sawdust for metronidazole adsorption. 2018 , 93, 3044-3055	8
771	Removal of aqueous Cr(VI) by a magnetic biochar derived from Melia azedarach wood. 2018, 256, 1-10	115
770	Plenty of room for carbon on the ground: Potential applications of biochar for stormwater treatment. 2018 , 625, 1644-1658	110
769	Heavy metal removal from aqueous solutions by calcium silicate powder from waste coal fly-ash. 2018 , 182, 776-782	70
768	Preparation of dumbbell manganese dioxide/gelatin composites and their application in the removal of lead and cadmium ions. 2018 , 350, 46-54	42
767	Adsorption of Pharmaceuticals from Water and Wastewater Using Nonconventional Low-Cost Materials: A Review. 2018 , 57, 3103-3127	217
766	Effects of biochar on Cd and Pb mobility and microbial community composition in a calcareous soil planted with tobacco. 2018 , 54, 373-383	42
765	Removal of Cu(II), Cd(II) and Pb(II) ions from aqueous solutions by biochars derived from potassium-rich biomass. 2018 , 180, 437-449	183
764	Application of biochar derived from rice straw for the removal of Th(IV) from aqueous solution. 2018 , 53, 1511-1521	3

763	Predicting Cu and Zn sorption capacity of biochar from feedstock C/N ratio and pyrolysis temperature. 2018 , 25, 7730-7739	30
762	Eucalyptus sawdust derived biochar generated by combining the hydrothermal carbonization and low concentration KOH modification for hexavalent chromium removal. 2018 , 206, 989-998	76
761	Entrapment of ball-milled biochar in Ca-alginate beads for the removal of aqueous Cd(II). 2018, 61, 161-168	71
760	Investigation of the kinetics and mechanisms of nickel and copper ions adsorption from aqueous solutions by date seed derived biochar. 2018 , 6, 1171-1181	62
759	Enhanced Hg(II) Adsorption by Monocarboxylic-Acid-Modified Microalgae Residuals in Simulated and Practical Industrial Wastewater. 2018 , 32, 4461-4468	13
758	Adsorption characteristics of arsenic and phosphate onto iron impregnated biochar derived from anaerobic granular sludge. 2018 , 35, 1409-1413	24
757	Biochar reduces soil heterotrophic respiration in a subtropical plantation through increasing soil organic carbon recalcitrancy and decreasing carbon-degrading microbial activity. 2018 , 122, 173-185	89
756	Investigating the potential of synthetic humic-like acid to remove metal ions from contaminated water. 2018 , 635, 1036-1046	24
755	A study of cadmium remediation and mechanisms: Improvements in the stability of walnut shell-derived biochar. 2018 , 636, 80-84	21
754	Study of Pb (II) adsorption from aqueous solutions by TiO2 functionalized with hydroxide ethyl aniline (PHEA/n-TiO2). 2018 , 263, 294-302	23
753	Removal of Pb(II) from aqueous solution using hydroxyapatite/calcium silicate hydrate (HAP/C-S-H) composite adsorbent prepared by a phosphate recovery process. 2018 , 344, 53-61	68
75 ²	Do biochars influence the availability and human oral bioaccessibility of Cd, Pb, and Zn in a contaminated slightly alkaline soil?. 2018 , 190, 218	15
751	Isotherms, kinetics and thermodynamics of hexavalent chromium removal using biochar. 2018 , 6, 2335-2343	75
750	DistillersNgrains anaerobic digestion residue biochar used for ammonium sorption and its effect on ammonium leaching from an Ultisol. 2018 , 25, 14563-14574	6
749	Comparison of nickel adsorption on biochars produced from mixed softwood and Miscanthus straw. 2018 , 25, 14626-14635	26
748	Adsorption of ammonium in aqueous solutions by pine sawdust and wheat straw biochars. 2018 , 25, 25638-25647	71
747	Engineered biochar derived from eggshell-treated biomass for removal of aqueous lead. 2018 , 121, 124-129	23
746	Biochars derived from wasted marine macro-algae (Saccharina japonica and Sargassum fusiforme) and their potential for heavy metal removal in aqueous solution. 2018 , 206, 364-372	95

745	Properties, characteristics and application of grinded Malpighia emarginata seeds in the removal of toxic metals from water. 2018 , 6, 50-56	11
744	Engineered/designer biochar for the removal of phosphate in water and wastewater. 2018 , 616-617, 1242-1260	185
743	Arsenic removal by perilla leaf biochar in aqueous solutions and groundwater: An integrated spectroscopic and microscopic examination. 2018 , 232, 31-41	222
742	Microwave-assisted preparation of nitrogen-doped biochars by ammonium acetate activation for adsorption of acid red 18. 2018 , 433, 222-231	68
741	Biosorption performance evaluation of heavy metal onto aerobic granular sludge-derived biochar in the presence of effluent organic matter via batch and fluorescence approaches. 2018 , 249, 410-416	36
740	Effects of ball milling on the physicochemical and sorptive properties of biochar: Experimental observations and governing mechanisms. 2018 , 233, 54-63	188
739	Biochar composite membrane for high performance pollutant management: Fabrication, structural characteristics and synergistic mechanisms. 2018 , 233, 1013-1023	15
738	Mechanisms of biochar assisted immobilization of Pb by bioapatite in aqueous solution. 2018 , 190, 260-266	46
737	Minireview of potential applications of hydrochar derived from hydrothermal carbonization of biomass. 2018 , 57, 15-21	268
736	The factors affecting biochar application in restoring heavy metal-polluted soil and its potential applications. 2018 , 34, 177-197	9
735	Effect of biochar particle size on hydrophobic organic compound sorption kinetics: Applicability of using representative size. 2018 , 619-620, 410-418	26
734	Removal of Copper and Lead using Banana Biochar in Batch Adsorption Systems: Isotherms and Kinetic Studies. 2018 , 43, 5711-5722	48
733	Biochar/MnAl-LDH composites for Cu (Dremoval from aqueous solution. 2018, 538, 443-450	59
732	Saccharide-derived microporous spherical biochar prepared from hydrothermal carbonization and different pyrolysis temperatures: synthesis, characterization, and application in water treatment. 2018 , 39, 2747-2760	28
731	Application of Biochar to the Remediation of Pb-Contaminated Solutions. 2018, 10, 4440	18
730	Bioavailability and leaching of Cd and Pb from contaminated soil amended with different sizes of biochar. 2018 , 5, 181328	26
729	State-of-the-art on the production and application of carbon nanomaterials from biomass. 2018 , 20, 5031-509	 57 ₁₅₂
728	Microparticle-Supported Nanocomposites for Safe Environmental Applications. 2018 , 305-317	1

727	Towards practical application of gasification: a critical review from syngas and biochar perspectives. <i>Critical Reviews in Environmental Science and Technology</i> , 2018 , 48, 1165-1213	11.1	39
726	Bagasse Cellulose Grafted with an Amino-Terminated Hyperbranched Polymer for the Removal of Cr(VI) from Aqueous Solution. 2018 , 10,		13
725	Functionalization of Molecularly Imprinted Polymer Microspheres for the Highly Selective Removal of Contaminants from Aqueous Solutions and the Analysis of Food-Grade Fish Samples. 2018 , 10,		8
724	Oxygen enriched network-type carbon spheres for multipurpose water purification applications. 2018 , 12, 160-171		9
723	Removal of heavy metals (Cu, Pb) from aqueous solutions using pine (Pinus halepensis) sawdust: Equilibrium, kinetic, and thermodynamic studies. 2018 , 12, 91-103		51
722	Qualitative and quantitative correlation of physicochemical characteristics and lead sorption behaviors of crop residue-derived chars. 2018 , 270, 545-553		37
721	Hydrogen production via steam reforming of acetic acid over biochar-supported nickel catalysts. 2018 , 43, 18160-18168		35
720	Effects of biochar on availability and plant uptake of heavy metals - A meta-analysis. 2018 , 222, 76-85		97
719	Simple fabrication of Fe3O4/C/g-C3N4 two-dimensional composite by hydrothermal carbonization approach with enhanced photocatalytic performance under visible light. 2018 , 8, 3484-3492		26
718	Arsenic Removal Using "Green" Renewable Feedstock-Based Hydrogels: Current and Future Perspectives. 2018 , 3, 5910-5917		26
717	Facile low-temperature one-step synthesis of pomelo peel biochar under air atmosphere and its adsorption behaviors for Ag(I) and Pb(II). 2018 , 640-641, 73-79		55
716	Iron Oxide Nanoparticles and Reclamation of Mine Sites. 2018 , 181-199		1
715	Influence of Intrinsic Properties of Lignocellulosic Feedstock on Adsorptive Properties of Biochar. 2018 , 144, 04018075		7
714	Valorizing Rice Straw and Its Anaerobically Digested Residues for Biochar to Remove Pb(II) from Aqueous Solution. 2018 , 2018, 1-11		4
713	Towards Biochar and Hydrochar EngineeringInfluence of Process Conditions on Surface Physical and Chemical Properties, Thermal Stability, Nutrient Availability, Toxicity and Wettability. 2018 , 11, 496	5	52
712	Introductory Chapter: Introducing Heavy Metals. 2018,		16
711	Fate of As(III) and As(V) during Microbial Reduction of Arsenic-Bearing Ferrihydrite Facilitated by Activated Carbon. 2018 , 2, 878-887		21
710	Impact of biochar amendment in agricultural soils on the sorption, desorption, and degradation of pesticides: A review. 2018 , 645, 60-70		138

(2019-2018)

709	Catalytic Removal of Aqueous Contaminants on N-Doped Graphitic Biochars: Inherent Roles of Adsorption and Nonradical Mechanisms. 2018 , 52, 8649-8658	460
708	Investigation of cracking and water availability of soil-biochar composite synthesized from invasive weed water hyacinth. 2018 , 263, 665-677	81
707	Lead sorption by biochar produced from digestates: Consequences of chemical modification and washing. 2018 , 219, 277-284	43
706	Enhanced antimonate (Sb(V)) removal from aqueous solution by La-doped magnetic biochars. 2018 , 354, 623-632	63
705	Adsorption behavior and mechanism of Cr(VI) by modified biochar derived from Enteromorpha prolifera. 2018 , 164, 440-447	103
704	A critical review of mechanisms involved in the adsorption of organic and inorganic contaminants through biochar. 2018 , 11, 1	68
703	Role of extracellular polymeric substances in efficient chromium(VI) removal by algae-based Fe/C nano-composite. 2018 , 211, 608-616	15
702	Polyethersulfone enwrapped hydrous zirconium oxide nanoparticles for efficient removal of Pb(II) from aqueous solution. 2018 , 349, 500-508	19
701	The effect of several activated biochars on Cd immobilization and microbial community composition during in-situ remediation of heavy metal contaminated sediment. 2018 , 208, 655-664	78
700	Simultaneous functionalization and magnetization of biochar via NH ambiance pyrolysis for efficient removal of Cr (VI). 2018 , 208, 712-721	80
699	Classical theory and electron-scale view of exceptional Cd(II) adsorption onto mesoporous cellulose biochar via experimental analysis coupled with DFT calculations. 2018 , 350, 1000-1009	75
698	High adsorption performance for As(III) and As(V) onto novel aluminum-enriched biochar derived from abandoned Tetra Paks. 2018 , 208, 800-807	27
697	Activated carbons from banana peels for the removal of nickel ions. 2019, 16, 667-680	18
696	Wood-based biochar for the removal of potentially toxic elements in water and wastewater: a critical review. 2019 , 64, 216-247	228
695	Synthesis and properties of porous EMnO2/polymer millimeter-sized beads for Ni(II) removal. 2019 , 273, 90-98	9
694	FIB-SEM Three-Dimensional Tomography for Characterization of Carbon-Based Materials. 2019 , 2019, 1-8	10
693	Reduction in Hg phytoavailability in soil using Hg-volatilizing bacteria and biochar and the response of the native bacterial community. 2019 , 12, 1014-1023	9
692	High extent mass recovery of alginate hydrogel beads network based on immobilized bio-sourced porous carbon@FeO-NPs for organic pollutants uptake. 2019 , 236, 124351	27

691	Potential use of biochar, compost and iron grit associated with Trifolium repens to stabilize Pb and As on a multi-contaminated technosol. 2019 , 182, 109432	15
690	Insights into the roles of the morphological carbon structure and ash in the sorption of aromatic compounds to wood-derived biochars. 2019 , 693, 133455	16
689	Sulfurized biochar prepared by simplified technic with superior adsorption property towards aqueous Hg(II) and adsorption mechanisms. 2019 , 238, 121919	33
688	3D multi-wall perforated nanocellulose-based polyethylenimine aerogels for ultrahigh efficient and reversible removal of Cu(II) ions from water. 2019 , 378, 122157	80
687	Removal of lead by rice husk biochars produced at different temperatures and implications for their environmental utilizations. 2019 , 235, 825-831	54
686	A Critical Insight into Biomass Derived Biosorbent for Bioremediation of Dyes. 2019 , 4, 9762-9775	6
685	Effect of carbon chain structure on the phthalic acid esters (PAEs) adsorption mechanism by mesoporous cellulose biochar. 2019 , 362, 383-391	39
684	Fire-Induced Changes in Soil and Implications on Soil Sorption Capacity and Remediation Methods. 2019 , 9, 3447	13
683	Nanoscale Zero-Valent Iron and Chitosan Functionalized Biochar for Efficient Hexavalent Chromium Removal. 2019 , 16,	22
682	Biochar addition can reduce NOx gas emissions from a calcareous soil. 2019 , 31, 38-48	
		11
681	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019 , 86, 00025	11
681	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions	12
	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019 , 86, 00025 Evaluation of Autoclaved Aerated Concrete Fines for Removal of Cd(II) and Pb(II) from Wastewater.	
680	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019 , 86, 00025 Evaluation of Autoclaved Aerated Concrete Fines for Removal of Cd(II) and Pb(II) from Wastewater. 2019 , 145, 04019078 Exploring the benefits of biochar over other organic amendments for reducing of metal toxicity in	12
680 679	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019, 86, 00025 Evaluation of Autoclaved Aerated Concrete Fines for Removal of Cd(II) and Pb(II) from Wastewater. 2019, 145, 04019078 Exploring the benefits of biochar over other organic amendments for reducing of metal toxicity in Withania somnifera. 2019, 1, 293-307 Biochar Triggers Systemic Tolerance Against Cobalt Stress in Wheat Leaves Through Regulation of	12 3
680 679 678	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019, 86, 00025 Evaluation of Autoclaved Aerated Concrete Fines for Removal of Cd(II) and Pb(II) from Wastewater. 2019, 145, 04019078 Exploring the benefits of biochar over other organic amendments for reducing of metal toxicity in Withania somnifera. 2019, 1, 293-307 Biochar Triggers Systemic Tolerance Against Cobalt Stress in Wheat Leaves Through Regulation of Water Status and Antioxidant Metabolism. 2019, 19, 935-947 One-pot solvothermal synthesis of magnetic biochar from waste biomass: Formation mechanism	12 3 7
680 679 678	Determining the possibility of using selected composts to remove aqueous solutions from zinc ions in concentrations of up to 1000 mg.L-1. 2019, 86, 00025 Evaluation of Autoclaved Aerated Concrete Fines for Removal of Cd(II) and Pb(II) from Wastewater. 2019, 145, 04019078 Exploring the benefits of biochar over other organic amendments for reducing of metal toxicity in Withania somnifera. 2019, 1, 293-307 Biochar Triggers Systemic Tolerance Against Cobalt Stress in Wheat Leaves Through Regulation of Water Status and Antioxidant Metabolism. 2019, 19, 935-947 One-pot solvothermal synthesis of magnetic biochar from waste biomass: Formation mechanism and efficient adsorption of Cr(VI) in an aqueous solution. 2019, 695, 133886	12 3 7 51

(2019-2019)

673	Biochar DOM for plant promotion but not residual biochar for metal immobilization depended on pyrolysis temperature. 2019 , 662, 571-580	40
672	Mixed heavy metal removal from wastewater by using discarded mushroom-stick biochar: adsorption properties and mechanisms. 2019 , 21, 584-592	25
671	Evaluation of pilot-scale biochar-amended woodchip bioreactors to remove nitrate, metals, and trace organic contaminants from urban stormwater runoff. 2019 , 154, 1-11	83
670	Release of Nutrients and Trace Elements from Wood-, Agricultural Residue- and Manure-Based Biochars. 2019 , 13, 747-758	7
669	Amino modification of rice straw-derived biochar for enhancing its cadmium (II) ions adsorption from water. 2019 , 379, 120783	43
668	Synthesis of a novel magnetic biochar/Mg-Al layered double hydroxide composite and its strong adsorption of phosphate in aqueous solutions 2019 , 9, 18641-18651	29
667	Phytolith-rich biochar: A potential Si fertilizer in desilicated soils. 2019 , 11, 1264-1282	53
666	Recent advancements in biochar preparation, feedstocks, modification, characterization and future applications. 2019 , 8, 47-64	37
665	Quantifying the influence of surface physico-chemical properties of biosorbents on heavy metal adsorption. 2019 , 234, 488-495	23
664	Adsorptive removal of Cu(II) from aqueous solutions using a novel macroporous bead adsorbent based on poly(vinyl alcohol)/sodium alginate/KMnO4 modified biochar. 2019 , 102, 110-117	25
663	Risk evaluation of biochars produced from Cd-contaminated rice straw and optimization of its production for Cd removal. 2019 , 233, 149-156	34
662	Biochar-derived heterogeneous catalysts for biodiesel production. 2019 , 17, 1447-1469	48
661	Biochar from extracted marine Chlorella sp. residue for high efficiency adsorption with ultrasonication to remove Cr(VI), Zn(II) and Ni(II). 2019 , 289, 121578	42
660	The application of machine learning methods for prediction of metal sorption onto biochars. 2019 , 378, 120727	72
659	Eisenia fetida and biochar synergistically alleviate the heavy metals content during valorization of biosolids via enhancing vermicompost quality. 2019 , 684, 597-609	24
658	Influence of soil water content and soil amendments on trace metal release and seedling growth in serpentine soil. 2019 , 19, 3908-3921	2
657	Removal of hexavalent chromium, an analogue of pertechnetate, from aqueous solution using bamboo (Acidosasa edulis) shoot shell. 2019 , 321, 427-437	7
656	Biochar-supported nanomaterials for environmental applications. 2019 , 78, 21-33	47

655	Remediation of complex remazol effluent using biochar derived from green seaweed biomass. 2019 , 21, 1179-1189	23
654	Properties of Eupatorium adenophora Spreng (Crofton Weed) Biochar Produced at Different Pyrolysis Temperatures. 2019 , 36, 937-946	12
653	Removal of Zn (II) and Cu (II) Ions from Industrial Wastewaters Using Magnetic Biochar Derived from Water Hyacinth. 2019 , 2019, 1-11	22
652	Biofuel production through micro- and macroalgae pyrolysis [A review of pyrolysis methods and process parameters. 2019 , 142, 104599	66
651	Effects of macromolecular humic/fulvic acid on Cd(II) adsorption onto reed-derived biochar as compared with tannic acid. 2019 , 134, 43-55	22
650	Synthesis of Magnetic Biochar for Efficient Removal of Cr(III) Cations from the Aqueous Medium. 2019 , 2019, 1-7	10
649	Preparation, modification and environmental application of biochar: A review. 2019 , 227, 1002-1022	587
648	Surface-Modified Biochar with Polydentate Binding Sites for the Removal of Cadmium. 2019 , 20,	11
647	Comparative efficiency of peanut shell and peanut shell biochar for removal of arsenic from water. 2019 , 26, 18624-18635	37
646	Enhanced Pb immobilization via the combination of biochar and phosphate solubilizing bacteria. 2019 , 127, 395-401	82
645	Interactive effects of rice straw biochar and EAlO on immobilization of Zn. 2019, 373, 250-257	24
644	Fe0/H2O Filtration Systems for Decentralized Safe Drinking Water: Where to from Here?. 2019 , 11, 429	21
643	Nanomaterials for the abatement of cadmium (II) ions from water/wastewater. 2019 , 12, 1489-1507	38
642	Pharmaceuticals of Emerging Concern in Aquatic Systems: Chemistry, Occurrence, Effects, and Removal Methods. 2019 , 119, 3510-3673	679
641	Highly efficient removal of Cr(VI) and Cu(II) by biochar derived from Artemisia argyi stem. 2019, 26, 13221-13	23 _f 4
640	Synthesis of industrial solid wastes/biochar composites and their use for adsorption of phosphate: From surface properties to sorption mechanism. 2019 , 571, 86-93	44
639	Conventional and novel techniques for the determination of Hg uptake by lettuce in amended agricultural peri-urban soils. 2019 , 668, 40-46	11
638	Magnetic apple pomace biochar: Simple preparation, characterization, and application for enriching Ag(I) in effluents. 2019 , 668, 115-123	27

637	Biochar-based engineered composites for sorptive decontamination of water: A review. 2019 , 372, 536-550	157
636	Biochar-based materials and their applications in removal of organic contaminants from wastewater: state-of-the-art review. 2019 , 1, 45-73	153
635	Biochar Immobilizes and Degrades 2,4,6-Trichlorophenol in Soils. 2019 , 38, 1364-1371	8
634	Pyrolytic temperature evaluation of macauba biochar for uranium adsorption from aqueous solutions. 2019 , 122, 381-390	33
633	Highly-effective removal of Pb by co-pyrolysis biochar derived from rape straw and orthophosphate. 2019 , 371, 191-197	66
632	Adsorption capacity of phenanthrene and pyrene to engineered carbon-based adsorbents produced from sewage sludge or sewage sludge-biomass mixture in various gaseous conditions. 2019 , 280, 421-429	31
631	Biochar-mediated sequestration of Pb and Cd leads to enhanced productivity in Mentha arvensis. 2019 , 172, 411-422	37
630	Surface functional groups of carbon-based adsorbents and their roles in the removal of heavy metals from aqueous solutions: A critical review. 2019 , 366, 608-621	435
629	Mesoporous Carbon-Based Enzyme Biocatalyst for Aquatic Recalcitrant Pollutant Treatment. 2019 , 103-124	1
628	N-doped biochar synthesized by a facile ball-milling method for enhanced sorption of CO2 and reactive red. 2019 , 368, 564-572	96
627	Effect of using powdered biochar and surfactant on desorption and biodegradability of phenanthrene sorbed to biochar. 2019 , 371, 253-260	10
626	Application of biochar derived from date palm biomass for removal of lead and copper ions in a batch reactor: Kinetics and isotherm scrutiny. 2019 , 722, 64-73	21
625	Ginger Straw Waste-Derived Porous Carbons as Effective Adsorbents toward Methylene Blue. 2019 , 24,	7
624	Nickel ion removal from aqueous solutions through the adsorption process: a review. 2019 ,	12
623	Removal of Cr(VI) from aqueous solution using magnetic modified biochar derived from raw corncob. 2019 , 43, 18663-18672	37
622	Adsorption characteristics of Pb(II) using biochar derived from spent mushroom substrate. 2019 , 9, 15999	38
621	Preparation of KOH and H3PO4 Modified Biochar and Its Application in Methylene Blue Removal from Aqueous Solution. 2019 , 7, 891	38
620	An insight into nanocellulose as soft condensed matter: Challenge and future prospective toward environmental sustainability. 2019 , 650, 1309-1326	50

619	Screening of wheat straw biochars for the remediation of soils polluted with Zn (II) and Cd (II). 2019 , 362, 311-317		51
618	Alginate-based composites for environmental applications: A critical review. <i>Critical Reviews in Environmental Science and Technology</i> , 2018 , 49, 318-356	11.1	127
617	Fabrication of hydrochar based on food waste (FWHTC) and its application in aqueous solution rare earth ions adsorptive removal: Process, mechanisms and disposal methodology. 2019 , 212, 1423-1433		25
616	Iron-carbon composite from carbonization of iron-crosslinked sodium alginate for Cr(VI) removal. 2019 , 362, 21-29		41
615	Co-Pyrolysis Biochar Derived from Rape Straw and Phosphate Rock: Carbon Retention, Aromaticity, and Pb Removal Capacity. 2019 , 33, 413-419		29
614	Kinetic study of uranium removal from aqueous solutions by macaBa biochar. 2019 , 206, 1354-1366		7
613	A novel cyanopropylsilane-functionalized titanium oxide magnetic nanoparticle for the adsorption of nickel and lead ions from industrial wastewater: Equilibrium, kinetic and thermodynamic studies. 2019 , 145, 914-920		32
612	Modeling the Surface Chemistry of Biochars. 2019 , 59-72		2
611	Biochar Is a Potential Source of Silicon Fertilizer. 2019 , 225-238		4
610	Characteristics of wood-derived biochars produced at different temperatures before and after deashing: Their different potential advantages in environmental applications. 2019 , 651, 2762-2771		29
609	Biochars and Biochar Composites. 2019 , 169-209		19
608	Biochar amendment improves crop production in problem soils: A review. 2019 , 232, 8-21		210
607	Integrated comparisons of thorium(IV) adsorption onto alkali-treated duckweed biomass and duckweed-derived hydrothermal and pyrolytic biochar. 2019 , 26, 2523-2530		10
606	Impacts of biochar application on upland agriculture: A review. 2019 , 234, 52-64		110
605	Roles of ammonia-oxidizing bacteria in improving metabolism and cometabolism of trace organic chemicals in biological wastewater treatment processes: A review. 2019 , 659, 419-441		47
604	Application of the biochar derived from orange peel for effective biosorption of copper and cadmium in batch studies: isotherm models and kinetic studies. 2019 , 12, 1		8
603	Enhanced ethanol production from syngas by Clostridium ragsdalei in continuous stirred tank reactor using medium with poultry litter biochar. 2019 , 236, 1269-1279		27
602	Synthesis, characterization, and application of date palm leaf waste-derived biochar to remove cadmium and hazardous cationic dyes from synthetic wastewater. 2019 , 12, 1		12

601	Natural Biomass as Carbon Sources for the Synthesis of Photoluminescent Carbon Dots. 2019 , 109-134	2
600	Carbonization and ball milling on the enhancement of Pb(II) adsorption by wheat straw: Competitive effects of ion exchange and precipitation. 2019 , 273, 70-76	99
599	Competitive adsorption of heavy metals in aqueous solution onto biochar derived from anaerobically digested sludge. 2019 , 219, 351-357	126
598	Removal of Cr(VI) oxoanion from contaminated water using granular jujube stems as a porous adsorbent. 2019 , 8, 319-323	12
597	Influence of different pyrolysis methods on the sorption property of rice straw biochar. 2019 , 54, 2773-2782	4
596	Study on the competitive adsorption and correlational mechanism for heavy metal ions using the carboxylated magnetic iron oxide nanoparticles (MNPs-COOH) as efficient adsorbents. 2019 , 473, 960-966	34
595	Biochar application to low fertility soils: A review of current status, and future prospects. 2019 , 337, 536-554	357
594	Unraveling sorption of nickel from aqueous solution by KMnO and KOH-modified peanut shell biochar: Implicit mechanism. 2019 , 214, 846-854	52
593	Relative distribution of Cd adsorption mechanisms on biochars derived from rice straw and sewage sludge. 2019 , 272, 114-122	144
592	Adsorption and desorption of heavy metals by the sewage sludge and biochar-amended soil. 2019 , 41, 1663-1674	32
591	Adsorption of Pb from aqueous solutions using Fe-Mn binary oxides-loaded biochar: kinetics, isotherm and thermodynamic studies. 2019 , 40, 1853-1861	20
590	Comparative study of calcium alginate, ball-milled biochar, and their composites on aqueous methylene blue adsorption. 2019 , 26, 11535-11541	44
589	Bioavailability of heavy metals in contaminated soil as affected by different mass ratios of biochars. 2020 , 41, 3329-3337	6
588	Impacts of the influx of e-waste into Hong Kong after China has tightened up entry regulations. Critical Reviews in Environmental Science and Technology, 2020 , 50, 105-134	14
587	Occurrence of contaminants in drinking water sources and the potential of biochar for water quality improvement: A review. <i>Critical Reviews in Environmental Science and Technology</i> , 2020 , 50, 549-6111	67
586	Chemical fractions and bioavailability of nickel in a Ni-treated calcareous soil amended with plant residue biochars. 2020 , 66, 730-742	4
585	Biochar as Sustainable Reinforcement for Polymer Composites. 2020 , 10-22	2
584	Overview of biochar production from preservative-treated wood with detailed analysis of biochar characteristics, heavy metals behaviors, and their ecotoxicity. 2020 , 384, 121356	45

583	Effect of phosphorus-modified biochars on immobilization of Cu (II), Cd (II), and As (V) in paddy soil. 2020 , 390, 121349	65
582	An electron-scale comparative study on the adsorption of six divalent heavy metal cations on MnFe2O4@CAC hybrid: Experimental and DFT investigations. 2020 , 381, 122656	35
581	Biochar facilitated bioprocessing and biorefinery for productions of biofuel and chemicals: A review. 2020 , 295, 122252	57
580	Enhancing the removal performance of Cd(II) from aqueous solutions by NaA zeolite through doped thiourea reduced GO which is trapped within zeolite crystals. 2020 , 815, 152514	11
579	Novel pectin based composite hydrogel derived from grapefruit peel for enhanced Cu(II) removal. 2020 , 384, 121445	67
578	Synthesis of polyamine-CNT composites for the removal of toxic cadmium metal ions from wastewater. 2020 , 297, 111827	23
577	High-efficiency removal capacities and quantitative sorption mechanisms of Pb by oxidized rape straw biochars. 2020 , 699, 134262	27
576	Persulfate activation by sulfide-modified nanoscale iron supported by biochar (S-nZVI/BC) for degradation of ciprofloxacin. 2020 , 235, 116202	52
575	Rice Husk Derived Adsorbents for Water Purification. 2020 , 131-148	4
574	Use of modified Iranian clinoptilolite zeolite for cadmium and lead removal from oil refinery wastewater. 2020 , 17, 1239-1250	15
573	Recent trends on numerical investigations of response surface methodology for pollutants adsorption onto activated carbon materials: A review. <i>Critical Reviews in Environmental Science and Technology</i> , 2020 , 50, 1043-1084	58
57 ²	Recycling supercapacitor activated carbons for adsorption of silver (I) and chromium (VI) ions from aqueous solutions. 2020 , 238, 124638	24
571	Recovery of rare-earth metals from aqueous solutions by bio/adsorption using non-conventional materials: a review with recent studies and promising approaches in column applications. 2020 , 38, 339-355	38
570	Magnetic biochar derived from sewage sludge of concentrated natural rubber latex (CNRL) for the removal of Al3+ and Cu2+ ions from wastewater. 2020 , 46, 385-407	14
569	Oxidative degradation of tetracycline using persulfate activated by N and Cu codoped biochar. 2020 , 380, 122608	86
568	New insight into the impact of biochar during vermi-stabilization of divergent biowastes: Literature synthesis and research pursuits. 2020 , 238, 124679	20
567	Phosphogypsum as a novel modifier for distillers grains biochar removal of phosphate from water. 2020 , 238, 124684	56
566	Adsorptive removal of lead (II) ion from water and wastewater media using carbon-based nanomaterials as unique sorbents: A review. 2020 , 254, 109814	49

565	Synthesis of ZnO nanoparticle-anchored biochar composites for the selective removal of perrhenate, a surrogate for pertechnetate, from radioactive effluents. 2020 , 387, 121670		24
564	High sorption efficiency for As(III) and As(V) from aqueous solutions using novel almond shell biochar. 2020 , 243, 125330		48
563	Low-cost field production of biochars and their properties. 2020 , 42, 1569-1578		11
562	Synthesis of sewage sludge-based carbon/TiO /ZnO nanocomposite adsorbent for the removal of Ni(II), Cu(II), and chemical oxygen demands from aqueous solutions and industrial wastewater. 2020 , 92, 588-603		6
561	Characteristics and applications of biochar for remediating Cr(VI)-contaminated soils and wastewater. 2020 , 42, 1543-1567		23
560	A review of biochar-based sorbents for separation of heavy metals from water. 2020 , 22, 111-126		57
559	Characterization of novel thorium tolerant Ochrobactrum intermedium AM7 in consort with assessing its EPS-Thorium binding. 2020 , 388, 122047		16
558	An investigation of local structures and EPR spectra for Cu2+ and VO2+ in biochar. 2020 , 20, 255-261		4
557	Polyethyleneimine-modified biochar for enhanced phosphate adsorption. 2020, 27, 7420-7429		16
556	Organic soil additives for the remediation of cadmium contaminated soils and their impact on the soil-plant system: A review. 2020 , 707, 136121		47
555	Preparation of montmorillonite modified biochar with various temperatures and their mechanism for Zn ion removal. 2020 , 391, 121692		67
554	Surface and colloid properties of biochar and implications for transport in porous media. <i>Critical Reviews in Environmental Science and Technology</i> , 2020 , 50, 2484-2522	11.1	13
553	Hydrothermal synthesis of chemically stable cross-linked poly-Schiff base for efficient Cr(VI) removal. 2020 , 55, 3259-3278		4
552	Conversion of Microalgae Biomass to Biofuels. 2020 , 149-161		7
551	Nitrogen and sulfur co-doped biochar derived from peanut shell with enhanced adsorption capacity for diethyl phthalate. 2020 , 258, 113674		31
550	The adsorptive removal of lead ions in aquatic media: Performance comparison between advanced functional materials and conventional materials. <i>Critical Reviews in Environmental Science and Technology</i> , 2020 , 50, 2441-2483	11.1	5
549	Comparison of adsorption behavior studies of Cd by vermicompost biochar and KMnO-modified vermicompost biochar. 2020 , 256, 109959		22
548	Adsorption of sulfate ion from water by zirconium oxide-modified biochar derived from pomelo peel. 2020 , 708, 135092		37

547	Impacts of biochar and silicate fertilizer on arsenic accumulation in rice (Oryza sativa L.). 2020, 189, 109928	12
546	A critical review of different factors governing the fate of pesticides in soil under biochar application. 2020 , 711, 134645	65
545	Biochar-based adsorbents for carbon dioxide capture: A critical review. 2020 , 119, 109582	81
544	Design and Preparation of Chitosan-Crosslinked Bismuth Ferrite/Biochar Coupled Magnetic Material for Methylene Blue Removal. 2019 , 17,	15
543	Pyrolyzed biowastes deactivated potentially toxic metals and eliminated antibiotic resistant genes for healthy vegetable production. 2020 , 276, 124208	8
542	Effective carbonaceous desiccated coconut waste adsorbent for application of heavy metal uptakes by adsorption: Equilibrium, kinetic and thermodynamics analysis. 2020 , 142, 105805	17
541	Combined use of municipal solid waste biochar and bacterial biosorbent synergistically decreases Cd(II) and Pb(II) concentration in edible tissue of forage maize irrigated with heavy metal-spiked water. 2020 , 6, e04688	5
540	Ultrasound assisted adsorption of reactive dye-145 by biochars from marine Chlorella sp. extracted solid waste pyrolyzed at various temperatures. 2020 , 8, 104403	11
539	Latest trends in heavy metal removal from wastewater by biochar based sorbents. 2020, 38, 101561	39
538	Toxic Metal Adsorption from Aqueous Solution by Activated Biochars Produced from Macadamia Nutshell Waste. 2020 , 12, 7909	6
537	Adsorption Mechanism and Structure-Performance Relationship of Chromium Ions by Biochar. 2020 , 231, 1	1
536	Biochar-bacteria-plant partnerships: Eco-solutions for tackling heavy metal pollution. 2020 , 204, 111020	21
535	Immobilization of Hg(II) on high-salinity Spirulina residue-induced biochar from aqueous solutions: Sorption and transformation mechanisms by the dual-mode isotherms. 2020 , 265, 115087	8
534	Reactivity of Pyrogenic Carbonaceous Matter (PCM) in mediating environmental reactions: Current knowledge and future trends. 2020 , 14, 1	6
533	Compost: Potent biosorbent for the removal of heavy metals from industrial and landfill stormwater. 2020 , 273, 122736	7
532	Organic Waste Composting through Nexus Thinking. 2020 ,	2
531	Removal of Heavy Metals from Wastewaters: A Challenge from Current Treatment Methods to Nanotechnology Applications. 2020 , 8,	17
530	Assessing the Effects of Biochar on the Immobilization of Trace Elements and Plant Development in a Naturally Contaminated Soil. 2020 , 12, 6025	11

529	The Eco-Friendly Biochar and Valuable Bio-Oil from: Pyrolysis Preparation, Characterization, and Adsorption Applications. 2020 , 13,	11
528	Valorization of agricultural wastes for multidimensional use. 2020 , 41-78	3
527	Effects of Rice Husk Biochar on Carbon Release and Nutrient Availability in Three Cultivation Age of Greenhouse Soils. 2020 , 10, 990	5
526	Sorption of Heavy Metals onto Biochar. 2020 ,	5
525	Effects of Temperature, Solution pH, and Ball-Milling Modification on the Adsorption of Non-steroidal Anti-inflammatory Drugs onto Biochar. 2020 , 105, 422-427	2
524	LDH of NiZnFe and its composites with carbon nanotubes and data-palm biochar with efficient adsorption capacity for RB5 dye from aqueous solutions: Isotherm, kinetic, and thermodynamics studies. 2020 ,	10
523	Response of organic acid-mobilized heavy metals in soils to biochar application. 2020 , 378, 114628	14
522	Novel Magnetic Pomelo Peel Biochar for Enhancing Pb(II) And Cu(II) Adsorption: Performance and Mechanism. 2020 , 231, 1	18
521	Dose-dependent Effect of Biochar as Soil Amendment on Reducing Copper Phytotoxicity and Mobility. 2020 , 14, 751-759	1
520	Assessment of agricultural waste-derived activated carbon in multiple applications. 2020, 191, 110176	13
519	Residue Char Derived from Microwave-Assisted Pyrolysis of Sludge as Adsorbent for the Removal of Methylene Blue from Aqueous Solutions. 2020 , 8, 979	1
518	Grand Challenges in Sorption Technologies. 2020 , 1,	
517	Heavy Metal Sorption by Sludge-Derived Biochar with Focus on Pb2+ Sorption Capacity at [3]/L Concentrations. 2020 , 8, 1559	2
516	Utilization of Jujube Biomass to Prepare Biochar by Pyrolysis and Activation: Characterization, Adsorption Characteristics, and Mechanisms for Nitrogen. 2020 , 13,	8
515	A Generalized Method for Modeling the Adsorption of Heavy Metals with Machine Learning Algorithms. 2020 , 12, 3490	10
514	Transformation of Nitrogen during Microalgae Liquefaction in Subcritical/Supercritical Ethanol. 2020 , 34, 14182-14189	1
513	Unravelling the Environmental Application of Biochar as Low-Cost Biosorbent: A Review. 2020 , 10, 7810	23
512	Toward the design of efficient adsorbents for Hg2+ removal: Molecular and thermodynamic insights. 2020 , 120, e26258	3

511	Enhanced Heavy Metal Removal from Synthetic Stormwater Using Nanoscale Zerovalent Iron Modified Biochar. 2020 , 231, 1	21
510	Adsorption of Lead (II) from Aqueous Solution with High Efficiency by Hydrothermal Biochar Derived from Honey. 2020 , 17,	4
509	Insights into facile synthesized pomelo biochar adsorbing thallium: potential remediation in agricultural soils. 2020 , 27, 22698-22707	2
508	Promoting mechanism of electronic shuttle for bioavailability of Fe(III) oxide and its environmental significance. 2020 , 20, 1157-1166	O
507	Efficient removal of heavy metal ions from the water of oil-rich regions using layered metal-phosphate incorporated activated carbon nanocomposite. 2020 , 34, 893-905	1
506	Sustainable impact of tartaric acid as electron shuttle on hierarchical iron-incorporated biochar. 2020 , 395, 125138	30
505	Integrated Process of Biomass Thermochemical Conversion to Obtain Pyrolytic Sugars for Biofuels and Bioproducts. 2020 , 285-311	3
504	Removal of Cd(II) and Pb(II) from wastewater via carbonation of aqueous Ca(OH)2 derived from eggshell. 2020 , 141, 278-287	6
503	Mathematical modelling of the influence of physico-chemical properties on heavy metal adsorption by biosorbents. 2020 , 255, 126965	7
502	The influence of ultrasonic pre-treatments on metal adsorption properties of softwood-derived biochar. 2020 , 11, 100445	5
501	Role of Pyrogenic Carbon in Parallel Microbial Reduction of Nitrobenzene in the Liquid and Sorbed Phases. 2020 , 54, 8760-8769	10
500	Adsorption of Cadmium Using Biochars Produced from Agro-Residues. 2020 , 124, 14592-14602	12
499	Modification of pyrogenic carbons for phosphate sorption through binding of a cationic polymer. 2020 , 579, 258-268	16
498	How Effective Are Nanomaterials for the Removal of Heavy Metals from Water and Wastewater?. 2020 , 231, 1	18
497	Facile synthesis of multifunctional bone biochar composites decorated with Fe/Mn oxide micro-nanoparticles: Physicochemical properties, heavy metals sorption behavior and mechanism. 2020 , 399, 123067	35
496	Treatment of industrial brine using capacitive deionization (CDI) towards zero liquid discharge - challenges and optimization. 2020 , 183, 116059	19
495	Circular economy in olive oil production - Olive mill solid waste to ethanol and heavy metal sorbent using microwave pretreatment. 2020 , 113, 321-328	23
494	Advances in application of cotton-based adsorbents for heavy metals trapping, surface modifications and future perspectives. 2020 , 201, 110825	24

493	Preparation of nitrogen doped magnesium oxide modified biochar and its sorption efficiency of lead ions in aqueous solution. 2020 , 314, 123708	24
492	Adsorption behavior of 2,4-DCP by rice straw biochar modified with CTAB. 2021 , 42, 3797-3806	1
491	Biochar technology in wastewater treatment: A critical review. 2020 , 252, 126539	209
490	Biochar based catalysts for the abatement of emerging pollutants: A review. 2020 , 394, 124856	64
489	Removal of Boron and Manganese Ions from Wet-Flue Gas Desulfurization Wastewater by Hybrid Chitosan-Zirconium Sorbent. 2020 , 12,	4
488	Biochar-mediated soils for efficient use of agrochemicals. 2020 , 621-645	1
487	Biochar production and applications in agro and forestry systems: A review. 2020 , 723, 137775	69
486	Solvent-free synthesis of magnetic biochar and activated carbon through ball-mill extrusion with FeO nanoparticles for enhancing adsorption of methylene blue. 2020 , 722, 137972	62
485	Adsorption Behavior and Relative Distribution of Cd Adsorption Mechanisms by the Magnetic and Nonmagnetic Biochars Derived from Chicken Manure. 2020 , 17,	2
484	Preparation of C-MOx nanocomposite for efficient adsorption of heavy metal ions via mechanochemical reaction of CaC and transitional metal oxides. 2020 , 393, 122487	20
483	Adsorption of Cadmium, Manganese and Lead Ions from Aqueous Solutions Using Spent Coffee Grounds and Biochar Produced by Its Pyrolysis in the Fluidized Bed Reactor. 2020 , 13,	18
482	Recycling application of waste long-root Eichhornia crassipes in the heavy metal removal using oxidized biochar derived as adsorbents. 2020 , 314, 123749	14
481	Comparative evaluation of wheat straw and press mud biochars for Cr(VI) elimination from contaminated aqueous solution. 2020 , 19, 101017	13
480	Recent advances in hydrothermal carbonisation: from tailored carbon materials and biochemicals to applications and bioenergy. 2020 , 22, 4747-4800	58
479	Influence of chromate adsorption and reduction on transport and retention of biochar colloids in saturated porous media. 2020 , 597, 124791	8
478	Highly effective lead (II) removal by sustainable alkaline activated 🛭 actoglobulin nanofibrils from whey protein. 2020 , 255, 120297	30
477	The effects of different factors on the removal mechanism of Pb(ii) by biochar-supported carbon nanotube composites 2020 , 10, 5988-5995	6
476	Adsorption of heavy metal ions by various low-cost adsorbents: a review. 2020 , 1-38	80

475	Contribution of different iron species in the iron-biochar composites to sorption and degradation of two dyes with varying properties. 2020 , 389, 124471	38
474	Effect of biochar modified with magnetite nanoparticles and HNO for efficient removal of Cr(VI) from contaminated water: A batch and column scale study. 2020 , 261, 114231	58
473	Green cross-linked bionanocomposite of magnetic layered double hydroxide/guar gum polymer as an efficient adsorbent of Cr(VI) from aqueous solution. 2020 , 236, 116070	40
472	Application of zero-valent iron coupled with biochar for removal of perfluoroalkyl carboxylic and sulfonic acids from water under ambient environmental conditions. 2020 , 719, 137372	18
471	Valorization of biomass waste to engineered activated biochar by microwave pyrolysis: Progress, challenges, and future directions. 2020 , 389, 124401	254
470	Sorption of Cd2+ and Pb2+ on Aragonite Synthesized from Eggshell. 2020 , 12, 1174	10
469	Multifunctional Ecyclodextrin Polymer for Simultaneous Removal of Natural Organic Matter and Organic Micropollutants and Detrimental Microorganisms from Water. 2020 , 12, 12165-12175	59
468	Facile synthesis of corncob biochar via in-house modified pyrolysis for removal of methylene blue in wastewater. 2020 , 7, 015518	13
467	Rational design, synthesis, adsorption principles and applications of metal oxide adsorbents: a review. 2020 , 12, 4790-4815	126
466	Remediation and its biological responses of Cd contaminated sediments using biochar and minerals with nanoscale zero-valent iron loading. 2020 , 713, 136650	20
465	Mechanisms of Pb and/or Zn adsorption by different biochars: Biochar characteristics, stability, and binding energies. 2020 , 717, 136894	52
464	Biochar from biomass waste as a renewable carbon material for climate change mitigation in reducing greenhouse gas emissions review. 2020 , 11, 2247	25
463	. 2020,	7
462	Effects of excessive impregnation, magnesium content, and pyrolysis temperature on MgO-coated watermelon rind biochar and its lead removal capacity. 2020 , 183, 109152	31
461	Adsorption of metals by watermelon-peel-derived biochar and mechanism in aqueous solution. 2020 , 15, 99-106	1
460	Cr(VI) Removal from Aqueous Solution Using a Magnetite Snail Shell. 2020 , 231, 1	13
459	Algae as potential feedstock for the production of biofuels and value-added products: Opportunities and challenges. 2020 , 716, 137116	168
458	Oxidized biochar obtained from pine needles as a novel adsorbent to remove caffeine from aqueous solutions. 2020 , 304, 112661	25

457	influencing factors. 2020 , 198, 110653	21
456	Stabilization of heavy metal-contaminated soils by biochar: Challenges and recommendations. 2020 , 729, 139060	94
455	Remediation of Lead-Contaminated Water by Virgin Coniferous Wood Biochar Adsorbent: Batch and Column Application. 2020 , 231, 1	19
454	Application of biochar-based materials in environmental remediation: from multi-level structures to specific devices. 2020 , 2, 1-31	60
453	Sustainable carbohydrate-derived building materials. 2020 , 285-304	
452	Enhanced antibacterial activity of magnetic biochar conjugated quaternary phosphonium salt. 2020 , 163, 360-369	12
451	A critical review of the effects of pretreatment methods on the exergetic aspects of lignocellulosic biofuels. 2020 , 212, 112792	142
450	Evaluating the protection of bacteria from extreme Cd (II) stress by P-enriched biochar. 2020 , 263, 114483	25
449	Facile fabrication of magnetic bio-derived chars by co-mixing with Fe3O4 nanoparticles for effective Pb2+ adsorption: Properties and mechanism. 2020 , 262, 121350	22
448	Hyper sorption capacity of raw and oxidized biochars from various feedstocks for U(VI). 2020 , 8, 103932	5
447	One-dimensional mesoporous inorganic nanostructures and their applications in energy, sensor, catalysis and adsorption. 2020 , 113, 100671	39
446	A green method for the simultaneous recovery of phosphate and potassium from hydrolyzed urine as value-added fertilizer using wood waste. 2020 , 157, 104793	19
445	Sustainable remediation with an electroactive biochar system: mechanisms and perspectives. 2020 , 22, 2688-2711	64
444	Ni(II) Adsorption on Biochars Produced from Different Types of Biomass. 2020 , 231, 1	3
443	Scientometric analysis and scientific trends on biochar application as soil amendment. 2020, 395, 125128	19
442	Adsorption of Perfluorooctane sulfonate (PFOS) onto metal oxides modified biochar. 2020 , 19, 100816	24
441	A high-performance biochar produced from bamboo pyrolysis with in-situ nitrogen doping and activation for adsorption of phenol and methylene blue. 2020 , 28, 2872-2880	24
440	Biochar-activated peroxydisulfate as an effective process to eliminate pharmaceutical and metabolite in hydrolyzed urine. 2020 , 177, 115809	49

439	The use of biochar for sustainable treatment of contaminated soils. 2020 , 119-167	3
438	The importance of mineral ingredients in biochar production, properties and applications. <i>Critical Reviews in Environmental Science and Technology</i> , 2021 , 51, 113-139	14
437	Synthesis, characterization and application of novel MnO and CuO impregnated biochar composites to sequester arsenic (As) from water: Modeling, thermodynamics and reusability. 2021 , 401, 123338	54
436	Biochars obtained from freshwater biomassgreen macroalga and hornwort as Cr(III) ions sorbents. 2021 , 11, 301-313	7
435	Facile preparation of sulfonated biochar for highly efficient removal of toxic Pb(II) and Cd(II) from wastewater. 2021 , 750, 141545	35
434	Ecotoxicological assessment of micropollutant Diclofenac biosorption on magnetic sawdust: Phyto, Microbial and Fish toxicity studies. 2021 , 403, 123532	34
433	Anaerobic fermentation treatment improved Cd adsorption of different feedstocks based hydrochars. 2021 , 263, 127981	6
432	Invasive plants as potential sustainable feedstocks for biochar production and multiple applications: A review. 2021 , 164, 105204	28
431	THE DARK SIDE OF BLACK GOLD: Ecotoxicological aspects of biochar and biochar-amended soils. 2021 , 403, 123833	52
430	Investigating the adsorption behavior and mechanisms of insoluble Humic acid/starch composite microspheres for metal ions from water. 2021 , 610, 125672	O
429	Cleaner production of agriculturally valuable benignant materials from industry generated bio-wastes: A review. 2021 , 320, 124281	34
428	Characterization of graphene/pine wood biochar hybrids: Potential to remove aqueous Cu. 2021 , 192, 110283	11
427	The emergence of multifunctional adsorbents and their role in environmental remediation. 2021 , 9, 104793	12
426	Recovery of valuable metals from spent mobile phone printed circuit boards using biochar in indirect bioleaching. 2021 , 280, 111642	6
425	Silicate-modified oiltea camellia shell-derived biochar: A novel and cost-effective sorbent for cadmium removal. 2021 , 281, 125390	38
424	Content and morphology of lead remediated by activated carbon and biochar: A spectral induced polarization study. 2021 , 411, 124605	18
423	Conventional and amended bioretention soil media for targeted pollutant treatment: A critical review to guide the state of the practice. 2021 , 189, 116648	26
422	Mechanistic understanding of highly selective adsorption of bisphenols on microporous-dominated nitrogen-doped framework carbon. 2021 , 762, 143115	8

(2021-2021)

421	reference to cadmium (II) and chromium (VI). 2021 , 4, 201-214	4
420	Biochar industry to circular economy. 2021 , 757, 143820	43
419	Advances in upgradation of pyrolysis bio-oil and biochar towards improvement in bio-refinery economics: A comprehensive review. 2021 , 21, 101276	25
418	Adsorption characteristics and mechanisms of Pb and Cd by a new agricultural waste-Caragana korshinskii biomass derived biochar. 2021 , 28, 13800-13818	11
417	In-depth study to decipher mechanisms underlying Arabidopsis thaliana tolerance to metal(loid) soil contamination in association with biochar and/or bacteria. 2021 , 182, 104335	6
416	The potential of biochar to enhance concentration and utilization of selected macro and micro nutrients for chickpea (Cicer arietinum) grown in three contrasting soils. 2021 , 17, 100289	9
415	Crayfish shell biochar for the mitigation of Pb contaminated water and soil: Characteristics, mechanisms, and applications. 2021 , 271, 116308	17
414	Pyrolysis of waste biomass and plastics for production of biochar and its use for removal of heavy metals from aqueous solution. 2021 , 320, 124278	43
413	Biochar-impacted sulfur cycling affects methylmercury phytoavailability in soils under different redox conditions. 2021 , 407, 124397	9
412	Hydrochar and pyrochar for sorption of pollutants in wastewater and exhaust gas: A critical review. 2021 , 268, 115910	28
411	Removal of heavy metals from industrial effluents by using biochar. 2021, 25-48	3
410	A facile synthesis of graphene oxide/locust bean gum hybrid aerogel for water purification. 2021 , 254, 117318	18
409	Recent Advances in Functionalized Nanoporous Carbons Derived from Waste Resources and Their Applications in Energy and Environment. 2021 , 5, 2000169	19
408	Contribution of nitrogen configurations to the adsorption of Cd(II) in nitrogen-enriched biochar. 2021 , 45, 12669-12677	1
407	Biochar as a sustainable product for remediation of petroleum contaminated soil. 2021, 4, 100055	17
406	Immobilization of heavy metals (Cd, Zn, and Pb) in different contaminated soils with swine manure biochar. 2021 , 33, 55-65	15
405	Review of Advances in Engineering Nanomaterial Adsorbents for Metal Removal and Recovery from Water: Synthesis and Microstructure Impacts. 2021 , 1, 623-661	27
404	Chromium desorption kinetics influenced by the rice husk and almond soft husk modified biochar in a calcareous soil. 2021 , 14, 1	3

403	Biochar-based nanocomposites: A sustainable tool in wastewater bioremediation. 2021 , 185-200	1
402	Biochar surface functional groups as affected by biomass feedstock, biochar composition and pyrolysis temperature. 2021 , 4, 36-46	38
401	Alteration of plant physiology by the application of biochar for remediation of organic pollutants. 2021 , 475-492	2
400	Biochar: A Carbon Negative Technology for Combating Climate Change. 2021 , 251-272	2
399	Co-modification of Biochar and Bentonite for Adsorption and Stabilization of Pb2+ ions. 2021 , 36, 1083	0
398	Biochar from Biomass: A Strategy for Carbon Dioxide Sequestration, Soil Amendment, Power Generation, CO2 Utilization, and Removal of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in the Environment. 2021 , 1-64	
397	High efficiency removal of Pb(ii) in aqueous solution by a biochar-supported nanoscale ferrous sulfide composite 2020 , 11, 953-959	3
396	Adsorptive Mechanism of Chromium Adsorption on SiltstoneNanomagnetiteBiochar Composite. 2021 , 31, 1608-1620	6
395	Pilot scale pyro-gasification of biomass and waste: char characterization. 1	
394	Magnetic biochar-based composites for removal of recalcitrant pollutants in water. 2021 , 163-187	1
393	Pyrolysis of Miscanthus and characterization of value-added bio-oil and biochar products.	9
392	Diffusive Gradient in thin film technique as tool for assessment of metal availability and kinetics of resupply in remediated soils. 2021 , 12, 100493	1
391	Use of Biochar for Limiting the Pathway of Exposure and Reducing the Risk of Heavy Metal Contamination from Mines. 2021 , 232, 1	1
390	Engineered biochar [A sustainable solution for the removal of antibiotics from water. 2021 , 405, 126926	75
389	Phosphorus Removal from Wastewater: The Potential Use of Biochar and the Key Controlling Factors. 2021 , 13, 517	13
388	Remediation of mercury-contaminated soils and sediments using biochar: a critical review. 2021 , 3, 23-35	4
387	Thermally activated mango peels hydrochar for fixed-bed continuous flow decontamination of Pb(II) ions from aqueous solution. 1	3
386	Kinetic and Isotherm Studies of Ni2+ and Pb2+ Adsorption from Synthetic Wastewater Using Eucalyptus camdulensis D erived Biochar. 2021 , 13, 3785	7

385	Influence of pyrolysis temperature on the characteristics and lead(II) adsorption capacity of phosphorus-engineered poplar sawdust biochar. 2021 , 154, 105010	8
384	Effects of Biochar on Replant Disease by Amendment Soil Environment. 2021 , 52, 673-685	3
383	Biochar remediation of soil: linking biochar production with function in heavy metal contaminated soils. 2021 , 67, 183-201	11
382	A state of the art review on phosphate removal from water by biochars. 2021 , 409, 128211	44
381	The potential use of straw-derived biochar as the adsorbent for La(III) and Nd(III) removal in aqueous solutions. 2021 , 28, 47024-47034	2
380	Biochar for Enhanced Surface Water Quality. 2021 ,	O
379	Cu(II) and Cd(II) capture using novel thermosensitive hydrogel microspheres: adsorption behavior study and mechanism investigation. 2021 , 96, 2382	2
378	Adsorption of Hexavalent Chromium by Sodium Alginate Fiber Biochar Loaded with Lanthanum. 2021 , 14,	5
377	Resource Utilization of Sludge and Its Potential Environmental Applications for Wastewater. 2021 , 217-245	
376	Biochar and Its Broad Impacts in Soil Quality and Fertility, Nutrient Leaching and Crop Productivity: A Review. 2021 , 11, 993	29
375	Fabrication of Silver@Aminoterephthalic Acid Coordination Polymer-Coated Fe3O4 for Effective Removal of Lead from Aqueous Media. 2021 , 15, 631-644	0
374	Pyrolysis Creates Electron Storage Capacity of Black Carbon (Biochar) from Lignocellulosic Biomass. 2021 , 9, 6821-6831	3
373	Activated biochars derived from wood biomass liquefaction residues for effective removal of hazardous hexavalent chromium from aquatic environments. 2021 , 13, 1247-1259	8
372	An insight review of lignocellulosic materials as activated carbon precursor for textile wastewater treatment. 2021 , 22, 101445	13
371	Sustainable Use of Biochar in Environmental Management.	1
370	Effect of short time ball milling on physicochemical and adsorption performance of activated carbon prepared from mangosteen peel waste. 2021 , 168, 723-733	12
369	Mechanism of cadmium removal from soil by silicate composite biochar and its recycling. 2021 , 409, 125022	12
368	Multifunctional applications of biochar beyond carbon storage. 2022 , 1-51	58

367	Fungi and biochar applications in bioremediation of organic micropollutants from aquatic media. 2021 , 166, 112247	14
366	Comparison of sugarcane pressmud with traditional low-cost materials for adsorption of lead and zinc in mining areas. 1	2
365	Engineered algal biochar for contaminant remediation and electrochemical applications. 2021, 774, 145676	44
364	Simple hydrothermal synthesis of magnetic MnFe2O4-sludge biochar composites for removal of aqueous Pb2+. 2021 , 156, 105173	13
363	Effect of biochar amendment on mobility and plant uptake of Zn, Pb and Cd in contaminated soil. 2021 , 779, 012082	1
362	Removal of methylene blue from water using okra (Abelmoschus esculentus L.) mucilage modified biochar. 2021 , 14, 100689	5
361	Ball-milling synthesis of biochar and biochar b ased nanocomposites and prospects for removal of emerging contaminants: A review. 2021 , 41, 101993	22
360	Biochar for remediation of agrochemicals and synthetic organic dyes from environmental samples: A review 2021 , 272, 129917	19
359	Study of soil microorganisms modified wheat straw and biochar for reducing cadmium leaching potential and bioavailability. 2021 , 273, 129644	17
358	Single and competitive sorption potential of date seed-derived biochar during removal of lead (II) and cadmium (II) ions. e13690	2
357	Characteristics and Mechanism of Pb2+ Adsorption From Aqueous Solution Onto Biochar Derived From Microalgae and Chitosan-Modified Microalgae. 2021 , 2,	2
356	Investigation of the adsorption of ions chromium by mean biochar from coniferous trees. 1	О
355	Enhanced ammonium removal on biochar from a new forestry waste by ultrasonic activation: Characteristics, mechanisms and evaluation. 2021 , 778, 146295	12
354	Enhanced activation of ultrasonic pre-treated softwood biochar for efficient heavy metal removal from water. 2021 , 290, 112569	9
353	Review of organic and inorganic pollutants removal by biochar and biochar-based composites. 2021 , 3, 255-281	124
352	Preparation and Characterization of Novel Magnesium Composite/Walnut Shells-Derived Biochar for As and P Sorption from Aqueous Solutions. 2021 , 11, 714	2
351	Utilization of pomelo peels to manufacture value-added products: A review. 2021 , 351, 129247	17
350	Pristine and Magnetic Kenaf Fiber Biochar for Cd Adsorption from Aqueous Solution. 2021 , 18,	12

(2021-2021)

349	Antiretroviral Drugs in African Surface Waters: Prevalence, Analysis, and Potential Remediation. 2021 ,	6
348	The long-term effectiveness of ferromanganese biochar in soil Cd stabilization and reduction of Cd bioaccumulation in rice. 1	4
347	Pyrolysis kinetics of Poplar fluff bio-char produced at high carbonization temperature: A mechanistic study and isothermal life-time prediction. 2021 , 296, 120637	3
346	Straw-derived biochar as the potential adsorbent for U(VI) and Th(IV) removal in aqueous solutions. 1	О
345	P-enriched hydrochar for soil remediation: Synthesis, characterization, and lead stabilization. 2021 , 783, 146983	3
344	Biomass-derived N/S dual-doped hierarchically porous carbon material as effective adsorbent for the removal of bisphenol F and bisphenol S. 2021 , 416, 126126	8
343	Disposal of wooden wastes used as heavy metal adsorbents as components of building bricks. 2021 , 40, 102371	3
342	An empirical literature analysis of adsorbent performance for methylene blue uptake from aqueous media. 2021 , 9, 105658	35
341	Towards a Soil Remediation Strategy Using Biochar: Effects on Soil Chemical Properties and Bioavailability of Potentially Toxic Elements. 2021 , 9,	10
340	Microplastics aged in various environmental media exhibited strong sorption to heavy metals in seawater. 2021 , 169, 112480	19
339	Bioretention systems for stormwater management: Recent advances and future prospects. 2021 , 292, 112766	20
338	A review on functionalized adsorbents based on peanut husk for the sequestration of pollutants in wastewater: Modification methods and adsorption study. 2021 , 310, 127502	16
337	Adsorption of arsenic (III) from aqueous solution by a novel phosphorus-modified biochar obtained from Taraxacum mongolicum Hand-Mazz: Adsorption behavior and mechanistic analysis. 2021 , 292, 112764	9
336	Synthesis, characteristics and mechanistic insight into the clays and clay minerals-biochar surface interactions for contaminants removal-A review. 2021 , 310, 127548	19
335	Predicting the sorption efficiency of heavy metal based on the biochar characteristics, metal sources, and environmental conditions using various novel hybrid machine learning models. 2021 , 276, 130204	13
334	A comprehensive review on zinc(II) sequestration from wastewater using various natural/modified low-cost agro-waste sorbents. 1	1
333	Kinetic and isotherm studies for the sorption of 134Cs and 60Co radionuclides onto supported titanium oxide. 2021 , 330, 127-139	3
332	Enhanced nitrate removal by physical activation and Mg/Al layered double hydroxide modified biochar derived from wood waste: Adsorption characteristics and mechanisms. 2021 , 9, 105184	7

331	Impacts of pyrolysis temperature on lead adsorption by cotton stalk-derived biochar and related mechanisms. 2021 , 9, 105602	14
330	Optimization of biochar production based on environmental risk and remediation performance: Take kitchen waste for example. 2021 , 416, 125785	9
329	Biochar Nanoparticles Induced Distinct Biological Effects on Freshwater Algae via Oxidative Stress, Membrane Damage, and Nutrient Depletion. 2021 , 9, 10761-10770	4
328	Adsorption behaviors of paper mill sludge biochar to remove Cu, Zn and As in wastewater. 2021 , 23, 101616	5
327	Fe(III) modified Egeria najas driven-biochar for highly improved reduction and adsorption performance of Cr(VI). 2021 , 388, 485-495	12
326	Iron-Modified Biochar from Sugarcane Straw to Remove Arsenic and Lead from Contaminated Water. 2021 , 232, 1	2
325	Sorption of lead (II) and strontium (II) ions from aqueous solutions onto non-living Chlorella Vulgaris Alga/ Date pit activated carbon composite. 1	O
324	Copper removal from aqueous solution using raw pine sawdust, olive pomace and their derived traditional biochars. 1	1
323	Application of pinewood waste-derived biochar for the removal of nitrate and phosphate from single and binary solutions. 2021 , 278, 130361	8
322	Heavy Metals Removal from Water by Efficient Adsorbents. 2021 , 13, 2659	13
322	Heavy Metals Removal from Water by Efficient Adsorbents. 2021 , 13, 2659 Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021 , 293, 112898	13
	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from	
321	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021 , 293, 112898 Production and use of biochar from lignin and lignin-rich residues (such as digestate and olive	1
321	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021, 293, 112898 Production and use of biochar from lignin and lignin-rich residues (such as digestate and olive stones) for wastewater treatment. 2021, 158, 105263 Efficient heavy metal removal from water by alginate-based porous nanocomposite hydrogels: The	1
321 320 319	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021, 293, 112898 Production and use of biochar from lignin and lignin-rich residues (such as digestate and olive stones) for wastewater treatment. 2021, 158, 105263 Efficient heavy metal removal from water by alginate-based porous nanocomposite hydrogels: The enhanced removal mechanism and influencing factor insight. 2021, 418, 126358	1 6 22
321 320 319 318	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021, 293, 112898 Production and use of biochar from lignin and lignin-rich residues (such as digestate and olive stones) for wastewater treatment. 2021, 158, 105263 Efficient heavy metal removal from water by alginate-based porous nanocomposite hydrogels: The enhanced removal mechanism and influencing factor insight. 2021, 418, 126358 Biochar in water and wastewater treatment - a sustainability assessment. 2021, 420, 129946 Biochar modulates mineral nitrogen dynamics in soil and terrestrial ecosystems: A critical review.	1 6 22 33
321 320 319 318 317	Anchoring Al- and/or Mg-oxides to magnetic biochars for Co-uptake of arsenate and fluoride from water. 2021, 293, 112898 Production and use of biochar from lignin and lignin-rich residues (such as digestate and olive stones) for wastewater treatment. 2021, 158, 105263 Efficient heavy metal removal from water by alginate-based porous nanocomposite hydrogels: The enhanced removal mechanism and influencing factor insight. 2021, 418, 126358 Biochar in water and wastewater treatment - a sustainability assessment. 2021, 420, 129946 Biochar modulates mineral nitrogen dynamics in soil and terrestrial ecosystems: A critical review. 2021, 278, 130378 Steel Slag and Autoclaved Aerated Concrete Grains as Low-Cost Adsorbents to Remove Cd2+ and	1 6 22 33 12

313	Nano-rod hydroxyapatite for the uptake of nickel ions: Effect of sintering behaviour on adsorption parameters. 2021 , 9, 105931	4
312	Adsorption of metals in oil sands process water by a biochar/iron oxide composite: Influence of the composite structure and surface functional groups. 2021 , 421, 129937	8
311	Biochar for environmental sustainability in the energy-water-agroecosystem nexus. 2021 , 149, 111379	31
310	Behaviors and influencing factors of the heavy metals adsorption onto microplastics: A review. 2021 , 319, 128777	21
309	Chemical aging of hydrochar improves the Cd adsorption capacity from aqueous solution. 2021 , 287, 117562	4
308	Crop straw-derived biochar alleviated cadmium and copper phytotoxicity by reducing bioavailability and accumulation in a field experiment of rice-rape-corn rotation system. 2021 , 280, 130830	7
307	Metolachlor-adsorption on the walnut shell biochar modified by the fulvic acid and citric acid in water. 2021 , 9, 106238	7
306	Biologically produced sulfur as a novel adsorbent to remove Cd from aqueous solutions. 2021 , 419, 126470	4
305	Calcite modification of agricultural waste biochar highly improves the adsorption of Cu(II) from aqueous solutions. 2021 , 9, 106215	2
304	Critical review on hazardous pollutants in water environment: Occurrence, monitoring, fate, removal technologies and risk assessment. 2021 , 797, 149134	39
303	Model sorption of industrial wastewater containing Cu2+, Cd2+, and Pb2+ using individual and mixed rice husk biochar. 2021 , 24, 101900	1
302	Comparative study on adsorption of cationic and anionic dyes by nanomagnetite supported on biochar derived from Eichhornia crassipes and Phragmites australis stems. 2021 , 16, 100569	8
301	Selective and enhanced nickel adsorption from sulfate- and calcium-rich solutions using chitosan. 2021 , 276, 119283	4
300	Sustainable remediation of hazardous environmental pollutants using biochar-based nanohybrid materials. 2021 , 300, 113762	12
299	Competitive adsorption of heavy metals onto modified biochars: Comparison of biochar properties and modification methods. 2021 , 299, 113651	9
298	Adsorption of Chalcophile, Siderophile, and Lithophile Elements from Aqueous Solutions Using Syngenetically Modified Biochar. 2021 , 147, 04021057	
297	Agricultural waste materials for adsorptive removal of phenols, chromium (VI) and cadmium (II) from wastewater: A review. 2022 , 204, 111916	16
296	Microalgal-based biochar in wastewater remediation: Its synthesis, characterization and applications. 2022 , 204, 111966	12

295	Biochar from constructed wetland biomass waste: A review of its potential and challenges. 2022 , 287, 132259	5
294	Modification of naturally abundant resources for remediation of potentially toxic elements: A review. 2022 , 421, 126755	6
293	Improved Pb(II) removal in aqueous solution by sulfide@biochar and polysaccharose-FeS@ biochar composites: Efficiencies and mechanisms. 2022 , 287, 132087	9
292	Remediation of petroleum-contaminated soil by ball milling and reuse as heavy metal adsorbent. 2022 , 424, 127305	3
291	Thiol-rich, porous carbon for the efficient capture of silver: Understanding the relationship between the surface groups and transformation pathways of silver. 2022 , 427, 131470	20
2 90	Biochar-based bioretention systems for removal of chemical and microbial pollutants from stormwater: A critical review. 2022 , 422, 126886	14
289	Selective copper recovery from ammoniacal waste streams using a systematic biosorption process. 2022 , 286, 131935	
288	Recent advances in applications of low-cost adsorbents for the removal of heavy metals from water: A critical review. 2022 , 278, 119510	37
287	Green synthesis of walnut shell hydrochar, its antimicrobial activity and mechanism on some pathogens as a natural sanitizer. 2022 , 366, 130608	1
286	Sorbents from waste materials: A circular economic approach. 2021 , 285-322	1
285	Study on adsorption-degradation of 2,4-dichlorophenol by modified biochar immobilized laccase. 1	2
284	Binary Adsorption Studies of Toxic Metal Ions of Lead and Copper from Aqueous Solution by Modified Foeniculum vulgaris Seeds (Fennel Seeds). 2021 , 33, 1611-1619	4
283	Fe3O4@Mesoporous-SiO2@Chitosan@Polyaniline CoreBhell Nanoparticles as Recyclable Adsorbents and Reductants for Hexavalent Chromium. 2021 , 4, 1831-1840	8
282	Enrichment of primary macronutrients in biochar for sustainable agriculture: A review. <i>Critical Reviews in Environmental Science and Technology</i> , 1-42	8
281	How does biochar amendment affect soil methane oxidation? A review. 2021 , 21, 1575-1586	6
2 80	Thermochemical Conversion of Biomass Waste-Based Biochar for Environment Remediation. 2021 , 1065-1080	0 0
279	Reclamation of a calcareous sodic soil with combined amendments: interactive effects of chemical and organic materials on soil chemical properties. 2021 , 14, 1	1
278	A Super-Amphiphilic 3D Silicone Sponge with High Porosity for the Efficient Adsorption of Various Pollutants. 2021 , 42, e2000603	1

277	State-of-the-Art Char Production with a Focus on Bark Feedstocks: Processes, Design, and Applications. 2021 , 9, 87	4
276	Surface Charge Effects on Adsorption of Solutes by Poplar and Elm Biochars. 2021 , 7, 11	1
275	Diatomite Chemical Activation for Effective Adsorption of Methylene Blue Dye from Model Textile Wastewater. 2021 , 12, 23-28	4
274	Remediation of Water Contaminated by Pb(II) Using Virgin Coniferous Wood Biochar as Adsorbent. 2020 , 363-366	1
273	Management of Environmental Waste and Pollutants: Current Trend and Research Directions. 2020 , 1-41	1
272	Low-Cost Adsorptive Removal Techniques for Pharmaceuticals and Personal Care Products. 2020 , 397-421	4
271	Mechanisms and adsorption capacities of biochar for the removal of organic and inorganic pollutants from industrial wastewater. 2021 , 18, 3273-3294	64
270	Utilization of nonedible oilseeds in a biorefinery approach with special emphasis on rubber seeds. 2020 , 311-336	2
269	Effect of pyrolysis temperature on the composition of DOM in manure-derived biochar. 2020 , 197, 110597	26
268	Investigating the adsorption behavior and quantitative contribution of Pb adsorption mechanisms on biochars by different feedstocks from a fluidized bed pyrolysis system. 2020 , 187, 109609	15
267	Comparison of the lead and copper adsorption capacities of plant source materials and their biochars. 2019 , 236, 118-124	56
266	Effects of Biochar on Microalgal Growth: Difference between Dissolved and Undissolved Fractions. 2020 , 8, 9156-9164	2
265	Potential of Biochar Application to Mitigate Salinity Stress in Eggplant. 2020 , 55, 1946-1955	10
264	Effects of Biochar Amendment on Soil Problems and Improving Rice Production under Salinity Conditions. 2019 , 7, 45-63	8
263	Pine-derived Biochar as Option for Adsorption of B, Zn, Cr, Pb, Ni and Decreasing of BOD5 in Landfill Leachate. 2017 , 9, 406-412	4
262	A review and future directions on enhancing sustainability benefits across food-energy-water systems: the potential role of biochar-derived products. 2019 , 6, 379-416	8
261	Conversion of coconut waste into cost effective adsorbent for Cu(II) and Ni(II) removal from aqueous solutions. 2021 , 26, 200250-0	3
260	Review of Biochar Properties and Remediation of Metal Pollution of Water and Soil. 2020 , 10, 200902	19

259	A review on activated carbon preparation from natural and eco-friendly raw materials. 2021,	0
258	Evaluating the Heavy Metal Risk in Spinacia oleracea L. and Its Surrounding Soil with Varied Biochar Levels: A Pot Experiment. 2021 , 13, 10843	2
257	Magnetic Iron-Containing Carbon Materials as Sorbents for the Removal of Pollutants from Aquatic Media (A Review). 2021 , 55, 285-305	1
256	Variation of Copper Adsorption with Initial pH and Pyrolysis Temperature by Saw Dust and Paddy Husk Biochar Made in an Industrial Type Pyrolizer. 2022 , 633-640	
255	Application of Fe-Impregnated Biochar from Cattle Manure for Removing Pentavalent Antimony from Aqueous Solution. 2021 , 11, 9257	O
254	Investigation on hexavalent chromium removal from simulated wastewater using royal poinciana pods-derived bioadsorbent. 1	1
253	Preparation of Porous Biochar from Soapberry Pericarp at Severe Carbonization Conditions. 2021 , 7, 228	1
252	Cr(III) dynamic removal in a fixed-bed column by using a co-gasification char. 1	
251	Study on biochar as desulfurizer for SOFC application. 2021 , 21, 430	0
250	Removal of Cd and Pb from Wastewater through Sequent Addition of KR-Slag, Ca(OH) Derived from Eggshells and CO Gas. 2021 , 6, 27600-27609	1
249	Review: Performance of Biochar under Diminish Water Stress in Plants. 1-16	0
248	Waste-Based Biochar for Remediation of Benzene-Contaminated Soil. 2019 , 09, 363-366	
247	Research Progress on Heavy Metal Adsorption by Fruit-Shell Biomass in Water. 2019 , 07, 119-130	
246	Green Photocatalyst for Diverge Applications. 2020 , 1-18	1
245	Potential of Biochar for the Remediation of Heavy Metal Contaminated Soil. 2020, 77-98	1
244	From Waste to Chemicals: Bio-Oils Production Through Microwave-Assisted Pyrolysis. 2020 , 207-231	Ο
243	Pristine and engineered biochar for the removal of contaminants co-existing in several types of industrial wastewaters: A critical review. 2021 , 151120	9
242	Biosorption of V(V) onto Lantana camara biochar modified by HPO: Characteristics, mechanism, and regenerative capacity. 2021 , 291, 132721	1

241	High surface area Eucalyptus wood biochar for the removal of phenol from petroleum refinery wastewater. 2021 , 5, 100353	2
240	Modern Carbon-Based Materials for Adsorptive Removal of Organic and Inorganic Pollutants from Water and Wastewater. 2021 , 26,	4
239	Correlation analysis between cationic metal characteristics and ion-exchange performance of brick-derived zeolites: A comprehensive mechanistic explanation. 2022 , 276, 125353	2
238	Evaluation of potassium ferrate activated biochar for the simultaneous adsorption of copper and sulfadiazine: Competitive versus synergistic. 2022 , 424, 127435	11
237	Thermochemical Conversion of Biomass Waste-Based Biochar for Environment Remediation. 2020, 1-16	
236	Biochartompost Mixtures as a Promising Solution to Organic Waste Management Within a Circular Holistic Approach. 2020 , 213-232	Ο
235	Biochar: A Growing Sanguinity as a Combinatorial Tool for Remediation of Heavy Metals from Wastewaters and Solid Waste Management. 2020 , 87-111	
234	Thermochemical Conversion of Biomass Waste-Based Biochar for Environment Remediation. 2020 , 1-16	5
233	Ligneous biochar research and development of technology for enhanced adsorption of potentially toxic elements. 2020 ,	
232	Adsorption of Cu(II) from aqueous solution by using pyrolytic bio-char of Spirulina. 73-83	
231	Product Characteristics of Sludge Pyrolysis and Adsorption Performance of Metals by Char. 2021 , 13, 12125	1
230	Efficiency and mechanisms of Sb(III/V) removal by Fe-modified biochars using X-ray absorption spectroscopy. 2021 , 106741	1
229	A particle scale micro-CT approach for 3D in-situ visualizing the Pb (II) adsorption in different crop residue-derived chars. 2022 , 344, 126269	1
228	Agricultural Waste Absorbents for Heavy Metal Removal. 2021 , 195-228	6
227	Using corncob-based biochar to intercept BTEX in stormwater filtration systems. 2020 , 82, 1858-1867	
226	Comparative study on the potential risk of contaminated-rice straw, its derived biochar and phosphorus modified biochar as an amendment and their implication for environment. 2021 , 293, 118515	1
225	Exploring effects of novel chemical modification of biochar on soil water retention and crack suppression: towards commercialization of production of biochar for soil remediation. 1	2
224	Co-transport of U(VI) and colloidal biochar in quartz sand heterogeneous media. 2021 , 151606	O

223	A Life Cycle Assessment of an Energy-Biochar Chain Involving a Gasification Plant in Italy. 2021 , 10, 1256	5
222	Nutrient recovery from wastewater: A review on the integrated Physicochemical technologies of ammonia stripping, adsorption and struvite precipitation. 2021 , 133664	1
221	Xerogel-like Materials from Sustainable Sources: Properties and Electrochemical Performances. 2021 , 14, 7977	3
220	Applications of 1D Mesoporous Inorganic Nanomaterials as Adsorbents. 2022 , 183-187	
219	Sorption behaviors of petroleum on micro-sized polyethylene aging for different time in seawater. 2021 , 808, 152070	3
218	Modified Pineapple Waste as Low-Cost Biomass for Removal of Co(II) from Wastewater in Batch and Continuous System.	
217	Application of Biochar for Wastewater Treatment. 2021 , 67-90	0
216	Remediation of heavy metal contaminated soil: Role of biochar. 2021 , 7, 39-63	O
215	Role of Biochar in the Removal of Organic and Inorganic Contaminants from Wastewater. 2021 , 107-134	
214	Qualitative and quantitative adsorption mechanisms of zinc ions from aqueous solutions onto dead carp derived biochar 2021 , 11, 38273-38282	O
213	Manganese oxide-modified biochar: production, characterization and applications for the removal of pollutants from aqueous environments - a review 2021 , 346, 126581	6
212	Novel nano-ferromagnetic activated graphene adsorbent extracted from waste for dye decolonization. 2022 , 45, 102512	7
211	Carbon materials in persulfate-based advanced oxidation processes: The roles and construction of active sites 2021 , 426, 128044	8
210	Remediation of noxious wastewater using nanohybrid adsorbent for preventing water pollution 2021 , 292, 133380	1
209	Removal of potentially toxic elements from contaminated soil and water using bone char compared to plant- and bone-derived biochars: A review 2021 , 427, 128131	7
208	In-Depth Study of Adsorption Mechanisms of Pb(II) from Aqueous Solution by Biochar Prepared from Pomelo Fruit Peel: Theoretical Models and Modern Analytical Methods.	
207	Utility of Surface-Modified Biochar for Sequestration of Heavy Metals in Water. 2021 , 27-48	
206	Effective batch and column remediation of zinc(II) from synthetic and electroplating effluents using biochar from brown alga. 1	1

205	A review on sources of heavy metals, their toxicity and removal technique using physico-chemical processes from wastewater 2022 , 29, 16772	6
204	Assessment of biochar application in decontamination of water and wastewater. 2022 , 69-74	Ο
203	Biochar Produced from Organic Waste Digestate and Its Potential Utilization for Soil Remediation: An Overview. 2022 , 263-292	0
202	Sustainable production and applications of biochar in circular bioeconomy. 2022, 337-361	
201	Effective sequestration of levofloxacin from wastewater by biochar-supported manganese dioxide composite: Experimental study and modelling analyses.	
2 00	Functionalized green carbon-based nanomaterial for environmental application. 2022, 347-382	
199	Biomass-based hydrothermal carbons for catalysis and environmental cleanup: a review. 2022 , 15, 160-184	Ο
198	A critical review on production, modification and utilization of biochar. 2022 , 161, 105405	4
197	N self-doped hierarchically porous carbon derived from biomass as an efficient adsorbent for the removal of tetracycline antibiotics 2022 , 822, 153567	3
196	The occurrence and removal of steroid estrogens in a full-scale anaerobic/anoxic/aerobic-membrane bioreactor process and the implication of the bacterial community dynamics. 2022 , 10, 107294	
195	Biochar-supported starch/chitosan-stabilized nano-iron sulfide composites for the removal of lead ions and nitrogen from aqueous solutions 2022 , 347, 126700	3
194	Quantitative and qualitative characteristics of dissolved organic matter derived from biochar depending on the modification method and biochar type. 2022 , 46, 102569	O
193	A comprehensive review on conventional and biological-driven heavy metals removal from industrial wastewater. 2022 , 7, 100168	9
192	Insight into the significant contribution of intrinsic defects of carbon-based materials for the efficient removal of tetracycline antibiotics. 2022 , 435, 134822	O
191	Waste tire rubber as heavy metal ion adsorbent. 2022 , 2175, 012030	1
190	Biochar application in biofiltration systems to remove nutrients, pathogens and pharmaceutical and personal care products from wastewater 2022 ,	
189	Remediation of Cd2+ in aqueous systems by alkali-modified (Ca) biochar and quantitative analysis of its mechanism. 2022 , 103750	О
188	Comparison of Novel Biochars and Steam Activated Carbon from Mixed Conifer Mill Residues. 2021 , 14, 8472	2

187	Biochar, slag and ferrous manganese ore affect lead, cadmium and antioxidant enzymes in water spinach (Ipomoea aquatica) grown in multi-metal contaminated soil. 2022 ,	1
186	Nanocomposite material-based catalyst, adsorbent, and membranes for petroleum wastewater treatment. 2022 , 147-160	
185	Industrial dye removal from tannery wastewater by using biochar produced from tannery fleshing waste: a road to circular economy. 2022 , 25, 1-18	0
184	Influence of pyrolysis temperature and feedstock biomass on Cu2+, Pb2+, and Zn2+ sorption capacity of biochar. 1	Ο
183	Biochar for removal of dyes in contaminated water: an overview. 2022 , 4, 1	12
182	Biochar-loaded nZVI/Ni bimetallic particles for hexavalent chromium removal from aqueous solution. 1-12	2
181	Nitrogen-doped biochars as adsorbents for mitigation of heavy metals and organics from water: a review. 2022 , 4, 1	4
180	Systematic Research on the Transport of Ball-Milled Biochar in Saturated Porous Media: Effect of Humic Acid, Ionic Strength, and Cation Types 2022 , 12,	1
179	Biomass-derived biochar: From production to application in removing heavy metal-contaminated water. 2022 , 160, 704-733	8
178	Zirconium-modified biochar as the efficient adsorbent for low-concentration phosphate: performance and mechanism 2022 , 1	Ο
177	Evaluation of the Immobilization of Coexisting Heavy Metal Ions of Pb2+, Cd2+, and Zn2+ from Water by Dairy Manure-Derived Biochar: Performance and Reusability. 2022 , 148,	
176	Fabrication, application, and mechanism of metal and heteroatom co-doped biochar composites (MHBCs) for the removal of contaminants in water: A review 2022 , 431, 128584	1
175	Adsorption of divalent copper from aqueous solution by magnesium chloride co-doped Cicer arietinum husk biochar: Isotherm, kinetics, thermodynamic studies and response surface methodology. 2022 , 18, 101004	0
174	Challenges and opportunities in microwave-assisted catalytic pyrolysis of biomass: A review. 2022 , 315, 118970	5
173	Biochar-based composites for remediation of polluted wastewater and soil environments: Challenges and prospects 2022 , 297, 134163	3
172	Advancements in net-zero pertinency of lignocellulosic biomass for climate neutral energy production. 2022 , 161, 112393	1
171	Efficient mercury sequestration from wastewaters using palm kernel and coconut shell derived biochars. 2022 , 8, 100196	O
170	Qualitative and quantitative investigation on adsorption mechanisms of Cd(II) on modified biochar derived from co-pyrolysis of straw and sodium phytate 2022 , 829, 154599	O

169	Effects of biochar on soil properties, heavy metal availability and uptake, and growth of summer squash grown in metal-contaminated soil. 2022 , 301, 111097	O
168	Adsorption of Pb2+ in Aqueous Solutions by Biologically Produced Sulfur as a Novel Adsorbent. 2021 , 54, 610-621	
167	Evaluation of olive stone biochar as valuable and inexpensive agro-waste adsorbent for the adsorption and removal of inorganic mercury from Nile tilapia aquaculture systems. 2022 , 53, 1676-1692	
166	Potential Use of Biochar in Pit Latrines as a Faecal Sludge Management Strategy to Reduce Water Resource Contaminations: A Review. 2021 , 11, 11772	1
165	Green Hydrogel-Biochar Composite for Enhanced Adsorption of Uranium 2021, 6, 34193-34205	2
164	The status of heavy metals in arable soils of contrasting texture treated by biochar - an experiment from Slovakia 2021 , 1-17	
163	Aging of microplastics and their role as vector for copper in aqueous solution. 2021,	O
162	Biochar-cadmium retention and its effects after aging with Hydrogen Peroxide (HO) 2021 , 7, e08476	O
161	Immobilization of microbes on biochar for water and soil remediation: A review 2022, 113226	2
160	Feasibility of Remediation of Heavy-Metal-Contaminated Marine Dredged Sediments by Active Capping with Biochar 2022 , 19,	1
159	Effects of the increases in soil pH and pH buffering capacity induced by crop residue biochars on available Cd contents in acidic paddy soils 2022 , 134674	O
158	Characteristics and Applications of Biochar in SoilPlant Systems: A Short Review of Benefits and Potential Drawbacks. 2022 , 12, 4051	2
157	The Removal of Pb from Aqueous Solution by Using Navel Orange Peel Biochar Supported Graphene Oxide: Characteristics, Response Surface Methodology, and Mechanism 2022 , 19,	O
156	Adsorption of Pb(II) from aqueous solution by pomelo fruit peel-derived biochar. 2022, 285, 126105	1
155	Treatments of wood ash amended biochar to reduce nutrient leaching and immobilise lead, copper, zinc and cadmium in aqueous solution: column experiments.	1
154	Biochar and biochar composites for oil sorption. 2022 , 527-554	1
153	Retention of oxyanions on biochar surface. 2022 , 233-276	
152	Exploring the Adsorption of Pb on Microalgae-Derived Biochar: A Versatile Material for Environmental Remediation and Electroanalytical Applications. 2022 , 10, 168	O

151	Measurement of Transport Properties of Woody Biomass Feedstock Particles Before and After Pyrolysis by Numerical Analysis of X-Ray Tomographic Reconstructions. 2022 , 10,	0
150	Removal of Cu, Pb and Zn from stormwater using an industrially manufactured sawdust and paddy husk derived biochar. 2022 , 102640	2
149	Optimization of the raw materials of biochars for the adsorption of heavy metal ions from aqueous solution.	2
148	Attributes of wood biochar as an efficient adsorbent for remediating heavy metals and emerging contaminants from water: A critical review and bibliometric analysis. 2022 , 10, 107825	1
147	Reduction of heavy metal uptake from polluted soils and associated health risks through biochar amendment: A critical synthesis. 2022 , 100086	2
146	Biochar promotes the growth of apple seedlings by adsorbing phloridzin. 2022 , 303, 111187	1
145	The efficiency of potato peel biochar for the adsorption and immobilization of heavy metals in contaminated soil 2022 , 1-11	1
144	Natural and recycled materials for sustainable membrane modification: Recent trends and prospects 2022 , 156014	1
143	Biochar production and modification for environmental improvement. 2022, 181-191	0
142	Fabrication of Cross-Linked PMMA/SnO2 Nanocomposites for Highly Efficient Removal of Chromium (III) from Wastewater. 2022 , 14, 2101	
141	Application of biochar in modification of fillers in bioretention cells: A review. 2022 , 181, 106689	O
140	Biochar from Biomass: A Strategy for Carbon Dioxide Sequestration, Soil Amendment, Power Generation, CO2 Utilization, and Removal of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in the Environment. 2022 , 1023-1085	O
139	Chromium Immobilization by Polysulfide Supported Nzvi@Biochar in Contaminated Soil: Ćr Bioavailability and Immobilization Mechanism.	
138	Biochar Impregnated Nanomaterials for Environmental Cleanup. 2022 , 331-345	
137	Emerging nanotechnology based advanced techniques for wastewater treatment. 2022, 135050	0
136	Insight into the adsorption isotherms and kinetics of Pb (II) on pellet biochar via in-situ non-destructive 3D visualization using micro-computed tomography. 2022 , 127406	1
135	A critical and recent developments on adsorption technique for removal of heavy metals from wastewater-A review. 2022 , 303, 135146	6
134	Research Progress on Adsorption of Arsenic from Water by Modified Biochar and Its Mechanism: A Review. 2022 , 14, 1691	1

133	Remediation of uranium-contaminated acidic red soil by rice husk biochar.	Ο
132	Use of Eggshell-Catalyzed Biochar Adsorbents for Pb Removal from Aqueous Solution.	
131	Oxygen-containing groups in cellulose and lignin biochar: their roles in U(VI) adsorption.	
130	Application of biochar for minewater remediation: Effect of scaling up production on performance under laboratory and field conditions. 2022 , 359, 127439	O
129	Algae, biochar and bacteria for acid mine drainage (AMD) remediation: A review. 2022, 304, 135284	2
128	Recycling 'Agricultural Liquid Waste and Industrial Waste for Improving Nitrate and Veterinary Antibiotics by Woodchip Bioreactor.	
127	Biochar-Based Nutritional Nanocomposites Altered Nutrient Uptake and Vacuolar H+-Pump Activities of Dill Under Salinity.	1
126	Design and Development of Onsite Biofilter Unit for Effective Remediation of Contaminants from Wastewater. 2100396	
125	Biochar modification with hematite and goethite as efficient persulfate activation catalysts for sulfamethoxazole degradation: one-step biochar synthesis method and solution matrix effect on sulfamethoxazole removal kinetics.	О
124	Soaked Al powder for efficient reduction of hexavalent chromium in neutral solution. 2022 , 365, 132901	O
123	Insight into copper and nickel adsorption from aqueous solutions onto carbon-coated-sand: Isotherms, kinetics, mechanisms, and cost analysis. 2022 , 3, 100045	О
122	H2 produced by catalytic reforming of acetic acid over Ni/char catalyst recycled from the biochar adsorption purification of simulated Ni electroplating wastewater. 2022 , 328, 125243	O
121	Ultrathin porous carbon nanosheet as an efficient adsorbent for the removal of bisphenol A: The overlooked role of topological defects. 2022 , 306, 135549	О
120	Effect of Pyrolysis Temperature on Removal Efficiency and Mechanisms of Hg(II), Cd(II), and Pb (II) by Maize Straw Biochar. 2022 , 14, 9022	O
119	Engineered Biochar as Adsorbent for the Removal of Contaminants from Aqueous Medium. 2022, 353-381	О
118	Co-Pyrolysis of Cotton Stalks and Low-Density Polyethylene to Synthesize Biochar and Its Application in Pb(II) Removal. 2022 , 27, 4868	
117	Surface Modification of Biochar for Dye Removal from Wastewater. 2022 , 12, 817	1
116	Biowaste Valorization Using Hydrothermal Carbonization for Potential Wastewater Treatment Applications. 2022 , 14, 2344	1

A comprehensive study on single and competitive adsorption-desorption of copper and cadmium using eco-friendly magnetite (Fe3O4) nanoparticles.

114	Perspectives of Engineered Biochar for Environmental Applications: A Review. 2022 , 36, 7940-7986	2
113	Wheat straw- and maize straw-derived biochar effects on the soil cadmium fractions and bioaccumulation in the wheathaize rotation system. 10,	
112	Adsorptive Behavior of Cu2+ and Benzene in Single and Binary Solutions onto Alginate Composite Hydrogel Beads Containing Pitch Pine-Based Biochar. 2022 , 14, 3468	
111	Biochar changed the distribution of imidacloprid in a plantBoilgroundwater system. 2022 , 136213	0
110	Wastewater Application in Agriculture-A Review. 2022 , 233,	
109	Highly Efficient and Selective Capture of Pb(II) by New Crosslinked Melamine-Based Polymethyl Methacrylate for Water Treatment. 2022 , 2022, 1-10	O
108	Biochar: A Sustainable Alternative in the Development of Electrochemical Printed Platforms. 2022 , 10, 344	1
107	Production of efficient carbon fiber from different solid waste residuals for adsorption of hazardous metals from wastewater samples.	2
106	State-of-the-art of research progress on adsorptive removal of fluoride-contaminated water environments using biochar-based materials: Practical feasibility through reusability and column transport studies. 2022 , 114043	0
105	Sustainable re-utilization of waste materials as adsorbents for water and wastewater treatment in Africa: Recent studies, research gaps, and way forward for emerging economies. 2022 , 9, 100282	1
104	Alginate-modified biochar derived from rice husk waste for improvement uptake performance of lead in wastewater. 2022 , 307, 135956	O
103	Considerations for evaluating innovative stormwater treatment media for removal of dissolved contaminants of concern with focus on biochar. 2022 , 307, 135753	1
102	Reaction medium for permeable reactive barrier remediation of groundwater polluted by heavy metals. 10,	O
101	Manganese stabilization in mine tailings by MgO-loaded rice husk biochar: Performance and mechanisms. 2022 , 308, 136292	О
100	The toxicity of heavy metals and plant signaling facilitated by biochar application: Implications for stress mitigation and crop production. 2022 , 308, 136466	1
99	Adsorption performance and mechanism of cationic and anionic dyes by KOH activated biochar derived from medical waste pyrolysis. 2022 , 314, 120271	О
98	Self-cleaning and regenerable nano zero-valent iron modified PCN-224 heterojunction for photo-enhanced radioactive waste reduction. 2023 , 442, 130018	O

97	Engineered Biochar as Adsorbent for Removal of Heavy Metals from Soil Medium. 2022, 151-170	О
96	Mechanism of metal sorption by biochar. 2022 , 313-330	O
95	An Overview of Recent Advancements in the Irrigation, Fertilization, and Technological Revolutions of Agriculture. 2022 , 167-184	0
94	Biochar: A Sustainable Approach Towards Environmental Remediation. 2022 , 307-322	O
93	Biochar as an Emerging Amendment for Remediation of Heavy Metals-Contaminated Soil. 2022, 445-485	O
92	Application of organic amendments and biostimulants for sustainable remediation of metals and metalloids. 2022 , 525-542	O
91	Microalgal biochar: A sustainable bioadsorbent. 2022 , 345-363	О
90	Treatment of mine water for the fast removal of zinc and lead by wood ash amended biochar. 2022 , 1, 506-516	O
89	Development of iron-based biochar for enhancing nitrate adsorption: Effects of specific surface area, electrostatic force, and functional groups. 2023 , 856, 159037	O
88	Combined Use of Spent Mushroom Substrate Biochar and PGPR Improves Growth, Yield, and Biochemical Response of Cauliflower (Brassica oleracea var. botrytis): A Preliminary Study on Greenhouse Cultivation. 2022 , 8, 830	3
87	Surface modification of mustard husk char to enhance its adsorption properties. 2022,	O
86	A practical evaluation on integrated role of biochar and nanomaterials in soil remediation processes.	O
85	Paradigm Shift in Environmental Remediation Toward Sustainable Development: Biodegradable Materials and ICT Applications. 2022 , 565-591	0
84	Optimization preparation of biochar from garden waste and quantitative analysis for Cd2+ adsorption mechanism in aqueous solution.	O
83	Arsenic removal from water and soils using pristine and modified biochars. 2022, 4,	1
82	Degradation of ciprofloxacin using heterogeneous Fenton catalysts derived from natural pyrite and rice straw biochar. 2022 , 134459	1
81	Improving earthworm quality and complex metal removal from water by adding aquatic plant residues to cattle manure. 2022 , 130145	1
80	Phosphorylated wood designed as a biosorbent for effectively removing Ni2+ from wastewater. 2022 , 188, 115727	O

79	Progress and challenges in molecularly imprinted polymers for adsorption of heavy metal ions from wastewater. 2022 , 36, e00178	0
78	Biosorption of Cu ²⁺ from Aqueous Solution using <i>Aspergillus oryzae</i> and BakerN Yeast.	0
77	Microwave-Assisted Chemically Modified Biochar for the Sequestration of Emerging Contaminants. 2022 , 283-310	0
76	Removing BaP from soil by biochar prepared with medicago and corn straw using batch and solid-phase extraction method. 2022 , 14, 4209-4218	0
75	Uranium Isotope (U-232) Removal from Waters by Biochar Fibers: An Adsorption Study in the Sub-Picomolar Concentration Range. 2022 , 27, 6765	2
74	Physical-Chemical Characterization of Different Carbon-Based Sorbents for Environmental Applications. 2022 , 15, 7162	O
73	A review on low-cost adsorbent (biochar) for the elimination of potentially toxic elements (PTEs) from contaminated water. 2022 , 15,	0
72	Investigation on the adsorption-desorption behavior of antibiotics by polybutylene succinate and polypropylene aged in different water conditions.	O
71	Rhizosphere Effect on Physicochemical Properties and Immobilization Performance of Biochar. 2022 , 233,	0
70	Capacitive removal of Pb ions via electrosorption on novel willow biocharfhanganese dioxide composites. 1-14	O
69	Application of Rice Husk Biochar and Earthworm on Concentration and Speciation of Heavy Metals in Industrial Sludge Treatment. 2022 , 19, 13463	0
68	Porous 3D-Biocomposite Adsorbent for Iron Reclamation and Use in Agricultural Applications.	1
67	Biochar: An environmentally friendly platform for construction of a SARS-CoV-2 electrochemical immunosensor. 2022 , 159797	1
66	Chemical Modification of Neem (Azadirachta indica) Biomass as Bioadsorbent for Removal of Pb2+ Ion from Aqueous Waste Water. 2022 , 2022, 1-18	0
65	Biochar derived from waste bamboo shoots for the biosorptive removal of ferrous ions from aqueous solution. 2022 , 100791	O
64	Using recoverable sulfurized magnetic biochar for active capping to remediate multiple heavy metal contaminated sediment. 2022 , 120555	O
63	Development of a sustainable nitrogen-doped biochar desulfurizer for solid oxide fuel cell systems. 2022 , 167, 106631	0
62	Effects of biochar particle size on sorption and desorption behavior of NH4+-N. 2022 , 189, 115837	O

61	Effect of pyrolysis temperature of biochar on Cd, Pb and As bioavailability and bacterial community composition in contaminated paddy soil. 2022 , 247, 114237	О
60	Enhanced lead and copper removal in wastewater by adsorption onto magnesium oxide homogeneously embedded hierarchical porous biochar. 2022 , 365, 128146	O
59	Modified pineapple waste as low-cost biomass for removal of Co(II) from simulated and real treated wastewater in batch and continuous system. 2022 , 50, 103206	0
58	Biochar: A New Emerging Tool to Mitigate Abiotic Stresses and Its Effect on Soil Properties. 2022 , 97-108	O
57	Impact of biochar colloids on thallium(I) transport in water-saturated porous media: Effects of pH and ionic strength. 2023 , 311, 137152	0
56	Biochar and Application of Machine Learning: A Review.	O
55	A review of mechanism and adsorption capacities of biochar-based engineered composites for removing aquatic pollutants from contaminated water. 10,	1
54	The Impact of Pyrolysis Temperature on Biochar Properties and Its Effects on Soil Hydrological Properties. 2022 , 14, 14722	4
53	Rapid adsorption of sulfamethazine on mesoporous graphene produced from plastic waste: optimization, mechanism, isotherms, kinetics, and thermodynamics.	0
52	Surface functional groups and degree of carbonization of selected chars from different processes and feedstock. 2022 , 17, e0277365	Ο
51	Diverse Material Based Geopolymer Towards Heavy Metals Removal: A Review. 2022,	0
50	Preparation of iron/calcium-modified biochar for phosphate removal from industrial wastewater. 2023 , 383, 135468	O
49	Exploring the evolution, trends and scope of microalgal biochar through scientometrics. 2023, 69, 102944	Ο
48	Advancement in algal bioremediation for organic, inorganic, and emerging pollutants. 2023 , 317, 120840	Ο
47	Enhancing cadmium removal efficiency through spinel ferrites modified biochar derived from agricultural waste straw. 2023 , 11, 109027	0
46	DNAzyme-templated exponential isothermal amplification for sensitive detection of lead pollution and high-throughput screening of microbial biosorbents. 2023 , 863, 160899	Ο
45	Advances in the Study of Heavy Metal Adsorption from Water and Soil by Modified Biochar. 2022 , 14, 3894	0
44	Improvement of rural soil properties and states by biomass carbon under the concept of sustainability: A research progress. 10,	Ο

43	Application of Natural Coagulants in Water Treatment: A Sustainable Alternative to Chemicals. 2022 , 14, 3751	2
42	Solvent-Free Synthesis of Magnetic Sewage Sludge-Derived Biochar for Heavy Metal Removal from Wastewater. 2023 , 20, 155	О
41	Life Cycle Assessment (LCA) of Biochar Production from a Circular Economy Perspective. 2022, 10, 2684	1
40	Synergistic remediation of lead pollution by biochar combined with phosphate solubilizing bacteria. 2022 , 160649	О
39	Uranium and Fluoride Removal from Aqueous Solution Using Biochar: A Critical Review for Understanding the Role of Feedstock Types, Mechanisms, and Modification Methods. 2022 , 14, 4063	0
38	Adsorption Characteristics of Modified Bamboo Charcoal on Cu(II) and Cd(II) in Water. 2022, 10, 787	O
37	Effective Usage of Biochar and Microorganisms for the Removal of Heavy Metal Ions and Pesticides. 2023 , 28, 719	1
36	Prospective of Waste Lignocellulosic Biomass as Precursors for the Production of Biochar: Application, Performance, and Mechanism Review.	O
35	Bio-Geotechnologies in Mine Land Restoration. 2023 , 52-126	0
34	An Overview of Green Bioprocessing of Algae-Derived Biochar and Biopolymers: Synthesis, Preparation, and Potential Applications. 2023 , 16, 791	O
33	Adsorption of Cd2+ onto apatite surface: Equilibrium, kinetics and thermodynamic studies. 2023 , e12971	О
32	Iron phthalocyanine doped carbon-based as a bifunctional material for peroxymonosulfate activation toward Reactive Red 24 degradation: Consolidated adsorption and multiple oxidation. 2023 , 51, 103476	O
31	Phosphoric acid-activated biochar derived from sunflower seed husk: Selective antibiotic adsorption behavior and mechanism. 2023 , 371, 128593	О
30	Effect of combined aging treatment on biochar adsorption and speciation distribution for Cd(II). 2023 , 867, 161593	O
29	Adsorption Characteristics of Indigenous Chromium-Resistant Aspergillus niger Strain Isolated from Red Soil for Remediation of Toxic Chromium in Red Soil Environments. 2023 , 11, 31	О
28	Biochars derived from carp residues: characteristics and copper immobilization performance in water environments. 2023 , 17,	O
27	Recent advances and development of blended sodium alginate wastewater management. 2023, 315-330	О
26	Biochar as Sustainable Alternative and Green Adsorbent for the Remediation of Noxious Pollutants: A Comprehensive Review. 2023 , 11, 117	O

25	The Role of Oxygenated Functional Groups on Cadmium Removal using Pyrochar and Hydrochar Derived from Guadua angustifolia Residues. 2023 , 15, 525	О
24	Bibliometric analysis of biochar research in 2021: a critical review for development, hotspots and trend directions. 2023 , 5,	О
23	Sodium alginate nanoadsorbents for wastewater treatment: synthesis and characterizations. 2023 , 235-271	О
22	Overcoming the Entropy Penalty of Direct Air Capture for Efficient Gigatonne Removal of Carbon Dioxide.	O
21	Migration electric-field assisted electrocoagulation with sponge biochar capacitive electrode for advanced wastewater phosphorus removal. 2023 , 231, 119645	O
20	The characteristic difference between non-drilosphere and drilosphere-aged biochar: Revealing that earthworms accelerate the aging of biochar. 2023 , 321, 138141	O
19	Biochar performance evaluation for heavy metals removal from industrial wastewater based on machine learning: Application for environmental protection. 2023 , 312, 123399	О
18	Structural characteristics of dissolved black carbon and its interactions with organic and inorganic contaminants: A critical review. 2023 , 872, 162210	O
17	Adsorption mechanisms of hydrogels for heavy metal and organic dyes removal: A short review. 2023 , 12, 100552	0
16	Enhanced adsorption of cadmium from aqueous solution by amino modification biochar and its adsorption mechanism insight. 2023 , 11, 109747	O
15	Arsenic, Iron, and Manganese Adsorption in Single and Trinary Heavy Metal Solution Systems by Bamboo-Derived Biochars. 2023 , 9, 40	O
14	Biosourced adsorbent prepared with rice husk part 1: A complete understanding of the structure of materials, the major role of mineral impurities for metal extraction. 2023 , 36, e00601	O
13	Chemical speciation determines combined cytotoxicity: Examples of biochar and arsenic/chromium. 2023 , 448, 130855	O
12	Feedstock and pyrolysis conditions affect suitability of biochar for various sustainable energy and environmental applications. 2023 , 170, 105881	O
11	Insight the mechanism of MgAl/layered double hydroxide supported on rubber seed shell biochar for Remazol Brilliant Violet 5R removal. 2023 , 16, 104643	О
10	Microbial reduction of Fe(III) in nontronite: Role of biochar as a redox mediator. 2023, 345, 102-116	O
9	Zn(II) removal from wastewater by an alkali-activated material prepared from steel industry slags: optimization and modelling of a fixed-bed process. 1-12	O
8	Green metal oxides coated biochar nanocomposites preparation and its utilization in vertical flow constructed wetlands for reactive dye removal: Performance and kinetics studies. 2023 , 256, 104167	O

7	Removal of metals from water using MOF-based composite adsorbents.	Ο
6	Synthesis of magnetic rice husk biochar and its application in the adsorption of Ni(II) from aqueous solutions.	O
5	The simultaneous high-effective removal of As(III) and Cd by a modified biochar derived from rice straw. 2023 , 11, 109874	O
4	Adsorptive Removal of Dimethyl Phthalate Using Peanut Shell Derived Biochar from Aqueous Solutions: Equilibrium, Kinetics and Mechanistic Studies	О
3	Biochar amendment of a metal contaminated soil partially immobilized Zn, Pb, and Cd and reduced ryegrass uptake. 11,	O
2	OPTIMUM FEATURES OF WOOD-BASED BIOCHARS: A CHARACTERIZATION STUDY. 2023 , 109976	O
1	Can application of biochar improve the soil water characteristics of silty loam soil?.	О