A review on lignin-based polymeric, micro- and nano-structured materials

DOI: 10.1016/j.reactfunctpolym.2014.09.017
Reactive and Functional Polymers, 2014, 85, 78-96.

#	Paper	IF	Citations
514	Lignin-Derived Advanced Carbon Materials. **2015**, 8, 3941-58		166
513	Kraft lignin as filler in PLA to improve ductility and thermal properties. **2015**, 72, 46-53		160
512	Reversible crosslinking of lignin via the furan□maleimide Diels□Alder reaction. **2015**, 17, 4991-5000		61
511	Laccase mediated oxidation of industrial lignins: Is oxygen limiting?. **2015**, 50, 1277-1283		35
510	Water soluble kraft lignin□crylic acid copolymer: synthesis and characterization. **2015**, 17, 4355-4366		74
509	Thermochemical conversion of lignin to functional materials: a review and future directions. **2015**, 17, 4888-4907		339
508	UV Cross-Linkable Lignin Thermoplastic Graft Copolymers. **2015**, 3, 1839-1845		37
507	An environmentally benign antimicrobial nanoparticle based on a silver-infused lignin core. **2015**, 10, 817-23		373
506	Polyurethane Coatings Based on Chemically Unmodified Fractionated Lignin. **2015**, 3, 1145-1154		115
505	Renewable Eugenol-Based Polymeric Oil-Absorbent Microspheres: Preparation and Oil Absorption Ability. **2015**, 3, 599-605		59
504	Modification of Kraft Lignin to Expose Diazobenzene Groups: Toward pH- and Light-Responsive Biobased Polymers. **2015**, 16, 2979-89		31
503	Softwood kraft lignin: Raw material for the future. **2015**, 77, 845-854		149
502	Structure□unction Relationships in the Phenolation of Lignins from Different Sources. **2015**, 3, 2526-2532		46
501	Lignin as Building Unit for Polymers. **2016**,		
500	Synthesis and Tribological Behavior of Ultra High Molecular Weight Polyethylene (UHMWPE)-Lignin Composites. **2016**, 4, 31		1
499	Carbon nanofibers from renewable bioresources (lignin) and a recycled commodity polymer [poly(ethylene terephthalate)]. **2016**, 133,		16
498	Lignin as a green primary antioxidant for polypropylene. **2016**, 133,		31

497	Radical Nature of C-Lignin. **2016**, 4, 5327-5335	34
496	Fluid-phase behavior of the guaiacol + CO2 system at high pressures. **2016**, 109, 95-99	
495	Lignocellulosic nanostructures as reinforcement in extruded and solvent casted polymeric nanocomposites: an overview. **2016**, 80, 295-316	69
494	Structural features of mildly fractionated lignin carbohydrate complexes (LCC) from spruce. **2016**, 6, 42120-42131	53
493	Influence of lignin source and esterification on properties of lignin-polyethylene blends. **2016**, 86, 320-328	77
492	Lignin-Based Composite Carbon Nanofibers. **2016**, 167-194	6
491	Oxyalkylation of Condensed Tannin with Propylene Carbonate as an Alternative to Propylene Oxide. **2016**, 4, 3103-3112	34
490	Acidification of prehydrolysis liquor and spent liquor of neutral sulfite semichemical pulping process. **2016**, 218, 518-25	36
489	Pretreatment processes for lignocellulosic biomass conversion to biofuels and bioproducts. **2016**, 2, 48-53	99
488	Thermogravimetric analyses (TGA) of lignins isolated from the residue of corn stover bioethanol (CSB) production. **2016**, 70, 1175-1182	7
487	From lignin association to nano-/micro-particle preparation: extracting higher value of lignin. **2016**, 18, 5693-5700	140
486	Chemical Modification of Lignin for Renewable Polymers or Chemicals. **2016**, 183-216	6
485	Allylation of a lignin model phenol: a highly selective reaction under benign conditions towards a new thermoset resin platform. **2016**, 6, 96281-96288	19
484	Effect of Fatty Acid Esterification on the Thermal Properties of Softwood Kraft Lignin. **2016**, 4, 5238-5247	57
483	High-Throughput Synthesis of Lignin Particles (~30 nm to ~2 □m) via Aerosol Flow Reactor: Size Fractionation and Utilization in Pickering Emulsions. **2016**, 8, 23302-10	120
482	Preparation of Lignin□Clay Complexes and Its Effects on Properties and Weatherability of Wood Flour/Polypropylene Composites. **2016**, 55, 9657-9666	6
481	New Insights on the Chemical Modification of Lignin: Acetylation versus Silylation. **2016**, 4, 5212-5222	59
480	Influence of lignin modification on the mechanical properties of lignin/PEO blends. **2016**, 7, 762-772	2

479	Chemical Sensors Based on New Polyamides Biobased on (Z) Octadec-9-Enedioic Acid and Cyclodextrin. **2016**, 217, 1620-1628	17
478	Structure and performance of Poly(vinyl alcohol)/wood powder composite prepared by thermal processing and solid state shear milling technology. **2016**, 99, 373-380	21
477	Synthesis and Characterization of Biodegradable Lignin Nanoparticles with Tunable Surface Properties. **2016**, 32, 6468-77	166
476	Nucleation ability of advanced functional silica/lignin hybrid fillers in polypropylene composites. **2016**, 126, 251-262	37
475	Lignin-Based Thermoplastic Materials. **2016**, 9, 770-83	145
474	Combination of lignin and L-lactide towards grafted copolymers from lignocellulosic butanol residue. **2016**, 86, 80-8	10
473	Heterogeneous catalytic oxidation for lignin valorization into valuable chemicals: what results? What limitations? What trends?. **2016**, 18, 1839-1854	233
472	Characterization and Physicochemical Properties of Condensed Tannins from Acacia catechu. **2016**, 64, 1751-60	39
471	Fractionation of Industrial Softwood Kraft Lignin: Solvent Selection as a Tool for Tailored Material Properties. **2016**, 4, 2232-2242	86
470	Plant, Soil and Microbes. **2016**,	19
469	Microbial Composting of Rice Straw for Improved Stability and Bioefficacy. **2016**, 271-290	2
468	Assesment of technical lignins for uses in biofuels and biomaterials: Structure-related properties, proximate analysis and chemical modification. **2016**, 83, 155-165	143
467	Extraction and Types of Lignin. **2016**, 13-25	20
466	Towards lignin-based functional materials in a sustainable world. **2016**, 18, 1175-1200	668
465	Solvent screening for the fractionation of industrial kraft lignin. **2016**, 70, 11-20	104
464	A comprehensive review on pre-treatment strategy for lignocellulosic food industry waste: Challenges and opportunities. **2016**, 199, 92-102	340
463	Effects of NCO:OH ratio on the mechanical properties and chemical structure of Kraft lignin-based polyurethane adhesive. **2017**, 93, 18-29	35
462	Optimization of the soda-ethanol delignification stage for a rice husk biorefinery. **2017**, 97, 156-165	23

461	In´vitro evaluation of biodegradable lignin-based nanoparticles for drug delivery and enhanced antiproliferation effect in cancer cells. **2017**, 121, 97-108	217
460	Biological valorization strategies for converting lignin into fuels and chemicals. **2017**, 73, 610-621	127
459	Adhesion properties of soy protein adhesives enhanced by biomass lignin. **2017**, 75, 66-73	60
458	One-pot lignin extraction and modification in γvalerolactone from steam explosion pre-treated lignocellulosic biomass. **2017**, 151, 152-162	32
457	Ultrasonic-assisted fabrication of montmorillonite-lignin hybrid hydrogel: Highly efficient swelling behaviors and super-sorbent for dye removal from wastewater. **2017**, 520, 903-913	65
456	Plant fibre-reinforced polymers: where do we stand in terms of tensile properties?. **2017**, 62, 441-464	47
455	Biopolymers from Sugarcane and Soybean Lignocellulosic Biomass. **2017**, 227-253	7
454	Solvent- and Halogen-Free Modification of Biobased Polyphenols to Introduce Vinyl Groups: Versatile Aromatic Building Blocks for Polymer Synthesis. **2017**, 10, 1813-1822	13
453	A Sustainable Bioeconomy. **2017**,	20
452	Chemical Modification of Methanol-Insoluble Kraft Lignin Using Oxypropylation Under Mild Conditions for the Preparation of Bio-Polyester. **2017**, 37, 334-342	11
451	Factors influencing the market diffusion of bio-based plastics: Results of four comparative scenario analyses. **2017**, 157, 289-298	39
450	Biorefineries: Industrial-Scale Production Paving the Way for Bioeconomy. **2017**, 233-270	4
449	Chemical modification and plasma-induced grafting of pyrolitic lignin. Evaluation of the reinforcing effect on lignin/poly(l -lactide) composites. **2017**, 118, 280-296	16
448	Enzymatic grafting of kraft lignin as a wood bio-protection strategy. Part 1: factors affecting the process. **2017**, 71, 681-687	6
447	Thermal conductivity and annealing effect on structure of lignin-based microscale carbon fibers. **2017**, 121, 35-47	33
446	Lignin nanoparticles by ultrasonication and their incorporation in waterborne polymer nanocomposites. **2017**, 134, 45318	51
445	Preparation of a Polyhydric Aminated Lignin and Its Use in the Preparation of Polyurethane Film. **2017**, 37, 323-333	17
444	Bio-Based Epoxy Resins Derived From Eugenol With Low Dielectric Constant. **2017**, 139,	11

443	Biotechnological and Biochemical Utilization of Lignin. **2019**, 166, 469-518	5
442	Molecular structure, kinetics and mechanism of thermal decomposition, molecular electrostatic potential, thermodynamic parameters and HOMO□UMO analysis of coumarin-containing graft copolymer. **2017**, 74, 2975-2993	3
441	Energy Crops. **2017**, 164-176	0
440	Adsorption properties of ion recognition rice straw lignin on PdCl 4 2□ Equilibrium, kinetics and mechanism. **2017**, 514, 260-268	17
439	Lignin-Based Materials Through Thiol-Maleimide "Click" Polymerization. **2017**, 10, 984-992	30
438	Esterification of industrial lignin and its effect on the resulting poly(3-hydroxybutyrate-co-3-hydroxyvalerate) or polypropylene blends. **2017**, 97, 281-291	49
437	Functionalization of carboxylated lignin nanoparticles for targeted and pH-responsive delivery of anticancer drugs. **2017**, 12, 2581-2596	71
436	Reactivity improvement of cellulolytic enzyme lignin via mild hydrothermal modification. **2017**, 75, 173-180	2
435	Preparation of lignin-based carbon aerogels as biomaterials for nano-supercapacitor. **2017**, 71, 478-482	15
434	Renewable Thiol□ne Thermosets Based on Refined and Selectively Allylated Industrial Lignin. **2017**, 5, 10918-10925	38
433	Extraction of nanolignin from coconut fibers by controlled microbial hydrolysis. **2017**, 109, 420-425	27
432	Fundamental Science and Applications for Biomaterials. **2017**, 39-62	
431	Microbial production of coconut fiber nanolignin for application onto cotton and linen fabrics to impart multifunctional properties. **2017**, 9, 147-153	6
430	Cyclic Carbonates as Safe and Versatile Etherifying Reagents for the Functionalization of Lignins and Tannins. **2017**, 5, 7334-7343	56
429	Novel Lignin-Based Materials as Products for Various Applications. **2017**, 519-554	1
428	Functionalized lignin biomaterials for enhancing optical properties and cellular interactions of dyes. **2017**, 5, 2114-2121	6
427	Structure-property relationships for technical lignins for the production of lignin-phenol-formaldehyde resins. **2017**, 108, 316-326	56
426	Natural antioxidants as stabilizers for polymers. **2017**, 145, 25-40	81

425	Thermal degradation behavior of lignin-modified porous styrene-divinylbenzene and styrene-bisphenol A glycerolate diacrylate copolymer microspheres. **2017**, 123, 364-375	16
424	Modification of Sodium Lignosulfonate and Evaluation of its Potential Use as Detergent Builders. **2017**, 37, 99-109	4
423	Tailor-Made Electrospun Nanofibers of Biowaste Lignin/Recycled Poly(Ethylene Terephthalate). **2017**, 25, 465-478	17
422	Effect of lignin on morphology, biodegradability, mechanical and thermal properties of low linear density polyethylene/lignin biocomposites. **2017**, 223, 012022	3
421	Structural Characterization of Lignin Isolated from Wheat-Straw during the Alkali Cooking Process. **2017**, 12,	1
420	Nanotechnology for drinking water purification. **2017**, 75-118	13
419	Composition of Lignin-to-Liquid Solvolysis Oils from Lignin Extracted in a Semi-Continuous Organosolv Process. **2017**, 18,	13
418	Lignin from Micro- to Nanosize: Production Methods. **2017**, 18,	106
417	Preparation of slow release nanopesticide microspheres from benzoyl lignin. **2018**, 72, 599-607	12
416	Green synthesis of lignin nanoparticle in aqueous hydrotropic solution toward broadening the window for its processing and application. **2018**, 346, 217-225	96
415	Soda lignin from Citrus sinensis bagasse: extraction, NMR characterization and application in bio-based synthesis of silver nanoparticles. **2018**, 3, 87-94	3
414	Electrically Conducting Carbon Microparticles by Direct Carbonization of Spent Wood Pulping Liquor. **2018**, 6, 3385-3391	13
413	Synthesis and Thermorheological Analysis of Biobased Lignin-graft-poly(lactide) Copolymers and Their Blends. **2018**, 6, 1650-1661	20
412	Effect of unmodified kraft lignin concentration on the emulsion and miniemulsion copolymerization of styrene with n-butyl acrylate and methacrylic acid to produce polymer hybrid latex. **2018**, 29, 1094-1106	10
411	Lignin Functionalized with Succinic Anhydride as Building Block for Biobased Thermosetting Polyester Coatings. **2018**, 6, 3392-3401	40
410	A one-pot biomimetic synthesis of selectively functionalized lignins from monomers: a green functionalization platform. **2018**, 20, 2651-2662	11
409	Differences in extractability under subcritical water reveal interconnected hemicellulose and lignin recalcitrance in birch hardwoods. **2018**, 20, 2534-2546	46
408	Design, characterization and preliminary biological evaluation of new lignin-PLA biocomposites. **2018**, 114, 855-863	45

407	A simple methodology for improving the performance and sustainability of rigid polyurethane foam by incorporating industrial lignin. **2018**, 117, 149-158	39
406	Synthesis and characterization of water-soluble PEGylated lignin-based polymers by macromolecular azo coupling reaction. **2018**, 29, 143-146	11
405	Bio- and Nanosorbents from Natural Resources. **2018**,	
404	Fractionation of lignin macromolecules by sequential organic solvents systems and their characterization for further valuable applications. **2018**, 106, 793-802	68
403	Modified lignin: Preparation and use in reversible gel via Diels-Alder reaction. **2018**, 107, 790-795	15
402	Thermal and mechanical properties of coconut shell lignin-based polyurethanes synthesized by solvent-free polymerization. **2018**, 53, 1470-1486	24
401	Polyarylester nanofiltration membrane prepared from monomers of vanillic alcohol and trimesoyl chloride. **2018**, 193, 58-68	26
400	Properties and chemical modifications of lignin: Towards lignin-based nanomaterials for biomedical applications. **2018**, 93, 233-269	313
399	Laccase-Catalyzed Synthesis of Low-Molecular-Weight Lignin-Like Oligomers and their Application as UV-Blocking Materials. **2018**, 13, 284-291	10
398	Electrically-Conductive Sub-Micron Carbon Particles from Lignin: Elucidation of Nanostructure and Use as Filler in Cellulose Nanopapers. **2018**, 8,	6
397	Biosourced Binder for Wood Particleboards Based on Spent Sulfite Liquor and Wheat Flour. **2018**, 10,	6
396	Characterization of Two Novel Bio-based Materials from Pulping Process Side Streams: Ecohelix and CleanFlow Black Lignin. **2018**, 13,	7
395	Green Preparation of Bioplastics Based on Degradation and Chemical Modification of Lignin Residue. **2018**, 38, 460-478	9
394	Unmodified kraft lignin isolated at room temperature from aqueous solution for preparation of highly flexible transparent polyurethane coatings.. **2018**, 8, 40765-40777	20
393	Advanced Applications of Lignin-based Materials. **2018**, 169-205	1
392	Functionalized Innovative Carbon Fibers Developed from Novel Precursors with Cost Efficiency and Tailored Properties. **2018**, 5, 27662-27671	0
391	The Cauchy problem for the degenerate convective Cahn-Hilliard equation. **2018**, 48,	1
390	Effect of Lignin and CNTs on the properties of melt-spun polymeric fibers. **2018**, 188, 01026	

389	TiO2/Lignin-Based Carbon Composited Photocatalysts for Enhanced Photocatalytic Conversion of Lignin to High Value Chemicals. **2018**, 6, 13968-13976		50
388	Polyurethanes from Recovered and Depolymerized Lignins. **2018**, 85-117		1
387	Conclusions and Future Perspectives. **2018**, 159-162		
386	An Integrated Approach for Added-Value Products from Lignocellulosic Biorefineries. **2018**,		5
385	Chemical Pulp Mills as Biorefineries. **2018**, 1-51		2
384	Advancement in technologies for the depolymerization of lignin. **2018**, 181, 115-132		100
383	Rigid polyurethane foams from unrefined crude glycerol and technical lignins. **2018**, 9, 111-132		6
382	Identification of lignin oligomers in Kraft lignin using ultra-high-performance liquid chromatography/high-resolution multiple-stage tandem mass spectrometry (UHPLC/HRMS). **2018**, 410, 7803-7814		20
381	Hybrid Adsorbent Materials Obtained by the Combination of Poly(ethylene-alt-maleic anhydride) with Lignin and Lignosulfonate. **2018**, 26, 4293-4302		10
380	Synthesis and structure characterization of polymeric nanoporous microspheres with lignin. **2018**, 25, 5843-5862		17
379	Adsorption of $PtCl_6^{2-}$ From Hydrochloric Acid Solution by Chemically Modified Lignin Based on Rice Straw. **2018**, 71, 931		3
378	Biomass ferulic acid-derived hollow polymer particles as selective adsorbent for anionic dye. *Reactive and Functional Polymers*, **2018**, 132, 9-18	4.6	9
377	Lignin-g-poly(acrylamide)-g-poly(diallyldimethyl- ammonium chloride): Synthesis, Characterization and Applications. **2018**, 7, 645-658		12
376	Preparation and Characterization of Softwood Kraft Lignin Copolymers as a Paper Strength Additive. **2018**, 10,		10
375	Acetylated Lignins: A Potential Bio-Sourced Photosensitizer. **2018**, 3, 5512-5516		9
374	Clicking Biobased Polyphenols: A Sustainable Platform for Aromatic Polymeric Materials. **2018**, 11, 2472-2491		18
373	Alternatives for Chemical and Biochemical Lignin Valorization: Hot Topics from a Bibliometric Analysis of the Research Published During the 2000–2016 Period. **2018**, 6, 98		35
372	Formation of Lignin Nanoparticles by Combining Organosolv Pretreatment of Birch Biomass and Homogenization Processes. **2018**, 23,		35

371	Synthetic and lignin-based surfactants: Challenges and opportunities. **2018**, 1, 126-138	50
370	The Effect of Plant Source on the Properties of Lignin-Based Polyurethanes. **2018**, 6,	17
369	Combined effects of multi-walled carbon nanotubes and lignin on polymer fiber-reinforced epoxy composites. **2018**, 218, 18-27	6
368	Techno-Economic Assessment, Scalability, and Applications of Aerosol Lignin Micro- and Nanoparticles. **2018**, 6, 11853-11868	63
367	Toxicological Assessment of a Lignin Core Nanoparticle Doped with Silver as an Alternative to Conventional Silver Core Nanoparticles. **2018**, 7,	10
366	Bio-Based Cellulose Acetate Films Reinforced with Lignin and Glycerol. **2018**, 19,	4
365	Thermosetting Polymers from Lignin Model Compounds and Depolymerized Lignins. **2018**, 376, 32	30
364	De-polymerization of industrial lignins to improve the thermo-oxidative stability of polyolefins. **2018**, 120, 238-249	18
363	Completely Bio-based Polyol Production from Sunflower Stalk Saccharification Lignin Residue via Solvothermal Liquefaction Using Biobutanediol Solvent and Application to Biopolyurethane Synthesis. **2018**, 26, 3493-3501	5
362	Lignin valorization for the production of renewable chemicals: State-of-the-art review and future prospects. **2018**, 269, 465-475	182
361	Fractionation of Soda Pulp Lignin in Aqueous Solvent through Membrane-Assisted Ultrafiltration. **2018**, 6, 9056-9064	20
360	Dual Catalytic Activity of an Ionic Liquid in Lignin Acetylation and Deacetylation. **2018**, 47, 860-863	11
359	Valorization of By-Products Following the Biorefinery Concept. **2018**, 163-178	5
358	The Influence of Additives on the Interfacial Bonding Mechanisms Between Natural Fibre and Biopolymer Composites. **2018**, 26, 851-863	20
357	Lignocellulosic-Based Nanostructures and Their Use in Food Packaging. **2018**, 47-69	3
356	Fractionation of three different lignins by thermal separation techniques□A comparative study. **2019**, 11, 206-217	19
355	The influence of the structural features of lignin-based polyurethane coatings on ammonium sulfate release: kinetics and thermodynamics of the process. **2019**, 16, 449-463	8
354	Lignin and Lignin Based Materials for the Removal of Heavy Metals from Waste Water-An Overview. **2019**, 233, 315-345	43

353	Lignosulfonates as Fire Retardants in Wood Flour-Based Particleboards. **2019**, 2019, 1-10		7
352	Lignin for polymer and nanoparticle production: Current status and challenges. **2019**, 97, 2827-2842		40
351	Chemo-enzymatically prepared lignin nanoparticles for value-added applications. **2019**, 35, 125		24
350	Fractionational and structural characterization of lignin and its modification as biosorbents for efficient removal of chromium from wastewater: a review. **2019**, 1,		40
349	Lignin improves release behavior of slow-release fertilizers with high content of urea. **2019**, 136, 48238		13
348	A review on biopolymer production via lignin valorization. **2019**, 290, 121790		107
347	Pickering emulsions: Preparation processes, key parameters governing their properties and potential for pharmaceutical applications. **2019**, 309, 302-332		119
346	Lignin-Based Polyurethanes: Opportunities for Bio-Based Foams, Elastomers, Coatings and Adhesives. **2019**, 11,		92
345	On the Experimental Assessment of the Molecular-Scale Interactions between Wood and Water. **2019**, 10, 616		11
344	Extra□ e caracteriza□ da lignina proveniente do pr□tratamento de biomassa para produ□ de etanol de 2a gera□. **2019**, 24, 55-60		0
343	Modification of Lignoboost Kraft Lignin from softwoods with dihydroxybenzenes. *Reactive and Functional Polymers*, **2019**, 142, 112-118	4.6	6
342	Development and Characterization of Lignin-Based Hydrogel for Use in Agricultural Soils: Preliminary Evidence. **2019**, 47, 1900101		6
341	Synthesis and characterization of lignin-polyurethane based wood adhesive. **2019**, 95, 102427		20
340	Optimization of delignification from Douglas fir sawdust by alkaline pretreatment with sodium hydroxide and its effect on structural and chemical properties of lignin and pyrolysis products. **2019**, 8, 100339		5
339	Structure, chemistry and physicochemistry of lignin for material functionalization. **2019**, 1, 1		11
338	Experimentally designed corn biomass fractionation to obtain lignin nanoparticles and fermentable sugars. **2019**, 140, 111649		16
337	Biomass and Industrial Wastes as Resource Materials for Aerogel Preparation: Opportunities, Challenges, and Research Directions. **2019**, 58, 17621-17645		27
336	The Influence of Lignin Diversity on the Structural and Thermal Properties of Polymeric Microspheres Derived from Lignin, Styrene, and/or Divinylbenzene. **2019**, 12,		3

335	Upcycling of lignin waste to activated carbon for supercapacitor electrode and organic adsorbent. **2019**, 36, 1543-1547	11
334	Structural and Thermal Analysis of Softwood Lignins from a Pressurized Hot Water Extraction Biorefinery Process and Modified Derivatives. **2019**, 24,	7
333	Investigation of multiple adsorption mechanisms for efficient removal of ofloxacin from water using lignin-based adsorbents. **2019**, 9, 637	20
332	Cleaning carbohydrate impurities from lignin using Pseudomonas fluorescens. **2019**, 21, 1648-1659	13
331	Low-cost natural binder for particleboards production: study of manufacture conditions and stability. **2019**, 93, 102325	13
330	Chemistry and Structure of Lignin. **2019**, 1-50	
329	Preparation of magnetic hydrogel microspheres of lignin derivate for application in water. **2019**, 685, 847-855	40
328	Lignin-based hydrogels: A review of preparation, properties, and application. **2019**, 135, 1006-1019	99
327	Effects of Lignin-Based Hollow Nanoparticle Structure on the Loading and Release Behavior of Doxorubicin. **2019**, 12,	12
326	A Simple Method to Synthesize Lignin Nanoparticles. **2019**, 3, 52	20
325	In vitro cytotoxicity studies of industrial Eucalyptus kraft lignins on mouse hepatoma, melanoma and Chinese hamster ovary cells. **2019**, 135, 353-361	16
324	Modulating hydrophobicity of composite polyamide membranes to enhance the organic solvent nanofiltration. **2019**, 223, 211-223	14
323	Antioxidant activity of unmodified kraft and organosolv lignins to be used as sustainable components for polyurethane coatings. **2019**, 16, 1543-1552	11
322	A Study of the Effect of Kosmotropic and Chaotropic Ions on the Release Characteristics of Lignin Microcapsules under Stimuli-Responsive Conditions. **2019**, 4, 6979-6993	15
321	Nano-scale polysaccharide materials in food and agricultural applications. **2019**, 88, 85-128	11
320	Applications of Lignocellulosic Fibers and Lignin in Bioplastics: A Review. **2019**, 11,	113
319	Recent Advances in Applications of Acidophilic Fungi to Produce Chemicals. **2019**, 24,	7
318	Extraction and characterization of lignin from corncob residue after acid-catalyzed steam explosion pretreatment. **2019**, 133, 241-249	33

317	Valorization of lignin in polymer and composite systems for advanced engineering applications - A review. **2019**, 131, 828-849	200
316	Transforming technical lignins to structurally defined star-copolymers under ambient conditions. **2019**, 21, 2478-2486	19
315	Fabrication of conductive Lignin/PAN carbon nanofibers with enhanced graphene for the modified electrodes. **2019**, 147, 262-275	55
314	An Overview on Plant Fiber Technology: An Interdisciplinary Approach. **2019**, 977-999	1
313	Emulsion Copolymerization of Styrene With n-Butyl Acrylate and Methacrylic Acid: Effect of Kraft Lignin Concentration and Peroxide Treatment on the Colloidal Properties. **2019**, 383, 1800019	4
312	Recovering cellulase and increasing glucose yield during lignocellulosic hydrolysis using lignin-MPEG with a sensitive pH response. **2019**, 21, 1141-1151	25
311	Functionalising lignin in crude glycerol to prepare polyols and polyurethane. **2019**, 10, 3-18	4
310	Overview of Biobased Polymers. **2019**, 1-35	5
309	A Quantitative Molecular Atlas for Interactions Between Lignin and Cellulose. **2019**, 7, 19570-19583	9
308	Electrostatic Deposition of the Oxidized Kraft Lignin onto the Surface of Aminosilicas: Thermal and Structural Characteristics of Hybrid Materials. **2019**, 4, 22530-22539	6
307	A review on lignin structure, pretreatments, fermentation reactions and biorefinery potential. **2019**, 271, 462-472	239
306	Effect of spent sulfite liquor on urea□formaldehyde resin performance. **2019**, 136, 47389	6
305	Sustainable polycondensation of multifunctional fatty acids from tomato pomace agro-waste catalyzed by tin (II) 2-ethylhexanoate. **2019**, 3-4, 100004	15
304	Codesign of Combinatorial Organosolv Pretreatment (COP) and Lignin Nanoparticles (LNPs) in Biorefineries. **2019**, 7, 2634-2647	26
303	Green and Facile Preparation of Regular Lignin Nanoparticles with High Yield and Their Natural Broad-Spectrum Sunscreens. **2019**, 7, 2658-2666	78
302	Recent developments in the conservation of materials properties of historical wood. **2019**, 102, 167-221	40
301	Lignin-based polymers and nanomaterials. **2019**, 56, 112-120	90
300	Poly(□caprolactone) chains grafted from lignin, hydroxymethylated lignin and silica/lignin hybrid macroinitiators: Synthesis and characterization of lignin- based thermoplastic copolymers. **2019**, 130, 547-557	19

299	High-Performance Lignin-Based Water-Soluble Macromolecular Photoinitiator for the Fabrication of Hybrid Hydrogel. **2019**, 7, 4004-4011	29
298	Value-adding of organosolv lignin: Designing mechanically robust UV-resistant polymeric glass via ARGET ATRP. **2019**, 475, 302-311	17
297	Linkage Abundance and Molecular Weight Characteristics of Technical Lignins by Attenuated Total Reflection-FTIR Spectroscopy Combined with Multivariate Analysis. **2019**, 12, 1139-1146	31
296	Thermal stability of lignin in ground pulp (GP) and the effect of lignin modification on GP thermal stability: TGA experiments with dimeric lignin model compounds and milled wood lignins. **2019**, 73, 493-499	6
295	Lignin for white natural sunscreens. **2019**, 122, 549-554	57
294	Lignin nanoparticles modified with tall oil fatty acid for cellulose functionalization. **2020**, 27, 273-284	18
293	A sustainable platform of lignin: From bioresources to materials and their applications in rechargeable batteries and supercapacitors. **2020**, 76, 100788	100
292	Self-assembly of colloidal lignin particles in a continuous flow tubular reactor. **2020**, 587, 124228	10
291	Recent developments in modification of lignin using ionic liquids for the fabrication of advanced materials A review. **2020**, 301, 112417	45
290	Fabricating carbon nanofibers from a lignin/r-PET blend: the synergy of mass ratio with the average fiber diameter. **2020**, 10, 1331-1343	3
289	Functionalization of wool fabric using lignin biomolecules extracted from groundnut shells. **2020**, 142, 559-563	13
288	Characterization of Wood-based Industrial Biorefinery Lignosulfonates and Supercritical Water Hydrolysis Lignin. **2020**, 11, 5835-5845	9
287	Novel amino-functionalized lignin microspheres: High performance biosorbent with enhanced capacity for heavy metal ion removal. **2020**, 156, 1160-1173	20
286	Synthesis of bio-based polyurethanes from Kraft lignin and castor oil with simultaneous film formation. **2020**, 145, 28-41	21
285	Greener synthesis of lignin nanoparticles and their applications. **2020**, 22, 612-636	169
284	Lignin Nanoparticles: Green Synthesis in a Valerolactone/Water Binary Solvent and Application to Enhance Antimicrobial Activity of Essential Oils. **2020**, 8, 714-722	26
283	Incorporation of nano lignin reverse micelles on the transparency, UV-blocking and rheological properties of high-density polyethylene films. **2020**, 74, 513-521	7
282	Recent Advances in the Application of Functionalized Lignin in Value-Added Polymeric Materials. **2020**, 12,	24

281	Towards lignin derived thermoplastic polymers. **2020**, 165, 3180-3197	17
280	Technological advancement in the synthesis and applications of lignin-based nanoparticles derived from agro-industrial waste residues: A review. **2020**, 163, 1828-1843	36
279	Green synthesis of lignin nano- and micro-particles: Physicochemical characterization, bioactive properties and cytotoxicity assessment. **2020**, 163, 1798-1809	20
278	Lignin for pharmaceutical and biomedical applications □Could this become a reality?. **2020**, 18, 100320	14
277	Falling Leaves Return to Their Roots: A Review on the Preparation of Ɛ-Valerolactone from Lignocellulose and Its Application in the Conversion of Lignocellulose. **2020**, 13, 6461-6476	21
276	Effect of Kraft lignins on the stability and thermal decomposition kinetics of nitrocellulose. **2020**, 692, 178732	11
275	Materials for the biorefinery: high bio-content, shape memory Kraft lignin-derived non-isocyanate polyurethane foams using a non-toxic protocol. **2020**, 22, 6922-6935	11
274	Lignin fractionation from laboratory to commercialization: chemistry, scalability and techno-economic analysis. **2020**, 22, 7448-7459	14
273	The cornerstone of realizing lignin value-addition: Exploiting the native structure and properties of lignin by extraction methods. **2020**, 402, 126237	36
272	Porphyrin-Loaded Lignin Nanoparticles Against Bacteria: A Photodynamic Antimicrobial Chemotherapy Application. **2020**, 11, 606185	7
271	Review on Conversion of Lignin Waste into Value-Added Resources in Tropical Countries. **2020**, 12, 5285	8
270	Amphiphilic Copolymers Derived from Butanosolv Lignin and Acrylamide: Synthesis, Properties in Water Solution, and Potential Applications. **2020**, 2, 5705-5715	5
269	Hemicellulose Recovery from Spent-Sulfite-Liquor: Lignin Removal by Adsorption to Resins for Improvement of the Ultrafiltration Process. **2020**, 25,	2
268	An application of ultrasonication in lignocellulosic biomass valorisation into bio-energy and bio-based products. **2020**, 132, 109924	31
267	Effects of Ethanol Concentration on Organosolv Lignin Precipitation and Aggregation from Miscanthus x giganteus. **2020**, 8, 845	5
266	Morphological and Wettability Properties of Thin Coating Films Produced from Technical Lignins. **2020**, 36, 9675-9684	13
265	A bowl-shaped biosorbent derived from sugarcane bagasse lignin for cadmium ion adsorption. **2020**, 27, 8757-8768	6
264	Synthesis and characterization of multiarm star-shaped water-soluble graft copolymer through atom transfer radical polymerization of acrylamide initiated from bio-based lignin macroinitiator. **2020**, 54, 1569-1585	3

263	Hardwood versus softwood Kraft lignin precursor-product relationships in the manufacture of porous carbon nanofibers for supercapacitors. **2020**, 8, 23543-23554	13
262	Glyoxalation of Kraft lignin and optimization of electrospinning process parameters for producing polyacrylonitrile/KL nanomats for potential applications as carbon material. **2020**, 27, 1	5
261	Lignin-Based Nanoparticles: A Review on Their Preparations and Applications. **2020**, 12,	34
260	Synthesis and characterization of poly (acrylonitrile-g-lignin) by semi-batch solution polymerization and evaluation of their potential application as carbon materials. **2020**, 27, 1	1
259	Maximizing production of sugar and ultrafine lignin particles from recalcitrant softwood by different acids-assisted organosolvolysis and fast pyrolysis. **2020**, 276, 122827	8
258	Insights into the Potential of Hardwood Kraft Lignin to Be a Green Platform Material for Emergence of the Biorefinery. **2020**, 12,	18
257	Electrospun Lignin-Derived Carbon Micro- and Nanofibers: A Review on Precursors, Properties, and Applications. **2020**, 8, 13868-13893	23
256	Derived high reducing sugar and lignin colloid particles from corn stover. **2020**, 14, 72	3
255	Zhurkov's Stress-Driven Fracture as a Driving Force of the Microcrystalline Cellulose Formation. **2020**, 12,	1
254	Process Strategies for the Transition of 1G to Advanced Bioethanol Production. **2020**, 8, 1310	32
253	Supercritical Fluids: A Promising Technique for Biomass Pretreatment and Fractionation. **2020**, 8, 252	29
252	Lignin as a Renewable Resource of Hydrocarbon Products and Energy Carriers (A Review). **2020**, 60, 227-243	24
251	Lignin-Based Micro- and Nanomaterials and their Composites in Biomedical Applications. **2020**, 13, 4266-4283	52
250	Lignin-based smart materials: a roadmap to processing and synthesis for current and future applications. **2020**, 7, 2237-2257	70
249	Flame Retardancy of Bio-Based Polyurethanes: Opportunities and Challenges. **2020**, 12,	40
248	Preparation of hyperbranched polymers from oxidized lignin modified with triazine for removal of heavy metals. **2020**, 179, 109271	10
247	Valorization of Lignin via Oxidative Depolymerization with Hydrogen Peroxide: Towards Carboxyl-Rich Oligomeric Lignin Fragments. **2020**, 25,	6
246	Valorization of lignocellulosic-based wastes. **2020**, 383-410	4

245	Tuning Lignin Characteristics by Fractionation: A Versatile Approach Based on Solvent Extraction and Membrane-Assisted Ultrafiltration. **2020**, 25,	8
244	Synthesis of reduced graphene oxide/MnO2 nanocomposites for oxygen reduction reaction catalyst. **2020**,	
243	Downstream processing of lignin derived feedstock into end products. **2020**, 49, 5510-5560	117
242	Current advancement on the isolation, characterization and application of lignin. **2020**, 162, 985-1024	89
241	On the Design of Novel Biofoams Using Lignin, Wheat Straw, and Sugar Beet Pulp as Precursor Material. **2020**, 5, 17078-17089	5
240	Functional MgO-Lignin Hybrids and Their Application as Fillers for Polypropylene Composites. **2020**, 25,	11
239	Paper and wood industry waste as a sustainable solution for environmental vulnerabilities of expansive soil: A novel approach. **2020**, 262, 110285	25
238	Laboratory scale production of hydrocarbon motor fuel components from lignocellulose: Combination of new developments of membrane science and catalysis. **2020**, 135, 105506	0
237	Mild and controlled lignin methylation with trimethyl phosphate: towards a precise control of lignin functionality. **2020**, 22, 1671-1680	11
236	Kinetics of partially depolymerized lignin as co-curing agent for epoxy resin. **2020**, 150, 786-792	12
235	Hydroxypropyl-modified and organosolv lignin/bio-based polyamide blend filaments as carbon fibre precursors**2020**, 55, 7066-7083	6
234	Assessing the potential of lignin nanoparticles as drug carrier: Synthesis, cytotoxicity and genotoxicity studies. **2020**, 152, 786-802	43
233	High Purity and Low Molecular Weight Lignin Nano-Particles Extracted from Acid-Assisted MIBK Pretreatment. **2020**, 12,	9
232	Basic understanding of the color distinction of lignin and the proper selection of lignin in color-depended utilizations. **2020**, 147, 607-615	22
231	Mechanical and Morphological Properties of Lignin-Based Thermosets. **2020**, 2, 668-676	20
230	Comparison of the Physicochemical Properties and Thermal Stability of Organosolv and Kraft Lignins from Hardwood and Softwood Biomass for Their Potential Valorization. **2020**, 11, 6541-6553	27
229	Lignin-based hydrogel alleviates drought stress in maize. **2020**, 175, 104055	22
228	Lignin as a potential source of high-added value compounds: A review. **2020**, 263, 121499	62

227	Effect of gamma irradiation on tensile and thermal properties of poplar wood flour-linear low density polyethylene composites. **2020**, 174, 108922	11
226	Transparent lignin-containing wood nanofiber films with UV-blocking, oxygen barrier, and anti-microbial properties. **2020**, 8, 7935-7946	46
225	Synthesis and Modification by Carbonization of Styrene-Ethylene Glycol Dimethacrylate-Lignin Sorbents and their Sorption of Acetylsalicylic Acid. **2020**, 13,	1
224	Lignin-Graft-Poly(lactic--glycolic) Acid Biopolymers for Polymeric Nanoparticle Synthesis. **2020**, 5, 9892-9902	11
223	The search for organic compounds with TMAH thermochemolysis: From Earth analyses to space exploration experiments. **2020**, 127, 115896	6
222	A Study on Pyrolysis of Lignin over Mesoporous Materials. **2020**,	
221	Lignin-Assisted Stabilization of an Oriented Liquid Crystalline Cellulosic Mesophase, Part B: Toward the Molecular Origin and Mechanism. **2020**, 21, 2276-2284	4
220	Lignin. **2020**,	13
219	The use of lignin in emulsion-based pressure-sensitive adhesives. **2020**, 100, 102598	11
218	Biomimic-Inspired and Recyclable Nanogel for Contamination Removal from Water and the Application in Treating Bleaching Effluents. **2020**, 59, 8622-8631	4
217	Isolation of Low Dispersity Fractions of Acetone Organosolv Lignins to Understand their Reactivity: Towards Aromatic Building Blocks for Polymers Synthesis. **2021**, 14, 387-397	7
216	Hydrothermal synthesis of biobased carbonaceous composite from a blend of kraft black liquor and tannin and its application to aspirin and paracetamol removal. **2021**, 608, 125597	7
215	Kinetics and column adsorption study of diclofenac and heavy-metal ions removal by amino-functionalized lignin microspheres. **2021**, 93, 302-314	18
214	Antioxidant, antibacterial and antitumoural activities of kraft lignin from hardwood fractionated by acid precipitation. **2021**, 166, 1535-1542	26
213	New Opportunities in the Valorization of Technical Lignins. **2021**, 14, 1016-1036	31
212	Novel composite hydrogels containing fractionated, purified lignins for aqueous-based separations. **2021**, 9, 1025-1038	2
211	Management of biomass. **2021**, 97-140	0
210	Industrial scale lignin recovery from pulping liquors. **2021**, 123-145	

209	Advances in biofuels and by-products from lignin. **2021**, 101-130	1
208	Lignin extraction and isolation methods. **2021**, 61-104	1
207	Prospects and Challenges of Using Lignin for Thermoplastic Materials. **2021**, 231-271	1
206	Lignin as the most abundant natural polymers as bio- and nanosorbents. **2021**, 111-129	
205	Electrospun nanofibers of biopolymers and biocomposites. **2021**, 297-350	0
204	Chemically Modified Lignin: Correlation between Structure and Biodegradability. **2021**, 9, 2119-2128	2
203	Thermal Properties of Ethanol Organosolv Lignin Depending on Its Structure. **2021**, 6, 1534-1546	4
202	Present and future prospective of lignin-based materials in biomedical fields. **2021**, 395-424	1
201	Are lignin-derived monomers and polymers truly sustainable? An in-depth green metrics calculations approach. **2021**, 23, 1495-1535	28
200	Food packaging applications of biopolymer-based (nano)materials. **2021**, 137-186	1
199	Estrogenic activity of lignin-derivable alternatives to bisphenol A assessed molecular docking simulations.. **2021**, 11, 22149-22158	2
198	Lignin Nanoparticles and Their Biodegradable Composites. **2021**, 295-327	
197	Types of lignin, properties, and structural characterization techniques. **2021**, 105-158	0
196	Revisiting lignin: a tour through its structural features, characterization methods and applications. **2021**, 45, 6986-7013	23
195	Understanding lignin micro- and nanoparticle nucleation and growth in aqueous suspensions by solvent fractionation. **2021**, 23, 1001-1012	14
194	Review on lignin modifications toward natural UV protection ingredient for lignin-based sunscreens. **2021**, 23, 4633-4646	22
193	A microfluidic actuator based on a stimuli-responsive hydrogel grafted into Cucurbita moschata xylems. **2021**, 17, 5941-5949	1
192	Development of lignin-based nanoparticles: fabrication methods and functionalization approaches. **2021**, 227-270	

191	Green chemistry design in polymers derived from lignin: review and perspective. **2021**, 113, 101344	26
190	Nano-Structured Lignin as Green Antioxidant and UV Shielding Ingredient for Sunscreen Applications. **2021**, 10,	22
189	Effect of compatibilizers on lignin/bio-polyamide blend carbon precursor filament properties and their potential for thermostabilisation and carbonisation. **2021**, 95, 107133	2
188	Carbon nanosheets derived from reconstructed lignin for potassium and sodium storage with low voltage hysteresis. 1	9
187	Lignin Extraction from Waste Pine Sawdust Using a Biomass Derived Binary Solvent System. **2021**, 13,	2
186	Lignin nanoparticles enter the scene: A promising versatile green tool for multiple applications. **2021**, 47, 107685	39
185	Acetone/Water Cosolvent Approach to Lignin Nanoparticles with Controllable Size and Their Applications for Pickering Emulsions. **2021**, 9, 5470-5480	8
184	Lignin carbon aerogel/nickel binary network for cubic supercapacitor electrodes with ultra-high areal capacitance. **2021**, 174, 500-508	14
183	Biocoatings and additives as promising candidates for ultralow friction systems. **2021**, 14, 358-381	3
182	A Study of Reactivity of Model Compounds of Lignin Biopolymer. 316, 75-80	1
181	Lignin Nanoparticles and Their Nanocomposites. **2021**, 11,	30
180	Preparation of carboxylated lignin-based epoxy resin with excellent mechanical properties. **2021**, 150, 110389	6
179	Functional Lignin Nanoparticles with Tunable Size and Surface Properties: Fabrication, Characterization, and Use in Layer-by-Layer Assembly. **2021**, 13, 26308-26317	1
178	Lignin-based polymers. **2021**,	
177	Towards sustainable production and utilization of plant-biomass-based nanomaterials: a review and analysis of recent developments. **2021**, 14, 114	22
176	Recent Developments in Lignin- and Tannin-Based Non-Isocyanate Polyurethane Resins for Wood Adhesives□ Review. **2021**, 11, 4242	32
175	Lignin-derived (nano)materials for environmental pollution remediation: Current challenges and future perspectives. **2021**, 178, 394-423	36
174	Improved Performance of Environmentally Friendly Blends of Biobased Polyethylene and Kraft Lignin Compatibilized by Reactive Extrusion with Dicumyl Peroxide. **2021**, 306, 2100196	4

173	On Laccase-Catalyzed Polymerization of Biorefinery Lignin Fractions and Alignment of Lignin Nanoparticles on the Nanocellulose Surface via One-Pot Water-Phase Synthesis. **2021**, 9, 8770-8782	6
172	Sub-micro and nano-lignin materials: Small size and rapid progress. **2021**, 164, 113412	5
171	MPEG-PCL Nanomicelles Platform for Synergistic Metformin and Chrysin Delivery to Breast Cancer in Mice. **2021**,	2
170	Uncovering the Structural Defect Effect on Thermal Transport in Carbon Fiber Mat by Thermal Reffusivity Dependence on Temperature. **2021**, 42, 1	
169	Electrospun lignin-PVP nanofibers and their ability for structuring oil. **2021**, 180, 212-221	5
168	Ultrafine Friction Grinding of Lignin for Development of Starch Biocomposite Films. **2021**, 13,	1
167	Properties versus application requirements of solubilized lignins from an elm clone during different pre-treatments. **2021**, 181, 99-111	5
166	Lignin fractionation: Effective strategy to reduce molecule weight dependent heterogeneity for upgraded lignin valorization. **2021**, 165, 113442	24
165	Cellulose nanocrystals: Pretreatments, preparation strategies, and surface functionalization. **2021**, 182, 1554-1581	61
164	Chemical and Microstructural Characterization of Vanilla Waste Compounds (Vanilla planifolia, Jackson) Using Eco-Friendly Technology. 1	2
163	Plant residue-derived hydrophilic and hydrophobic fractions contribute to the formation of soil organic matter. **2021**, 57, 1021-1028	0
162	Dynamic Mechanical Analysis and Thermal Expansion of Lignin-Based Biopolymers. **2021**, 13,	0
161	Biopolymeric Anticorrosion Coatings from Cellulose Nanofibrils and Colloidal Lignin Particles. **2021**, 13, 41034-41045	2
160	Raney Ni as a Versatile Catalyst for Biomass Conversion. **2021**, 11, 10508-10536	8
159	Green Fabrication Approaches of Lignin Nanoparticles from Different Technical Lignins: A Comparison Study. **2021**, 14, 4718-4730	3
158	Wood Adhesives Based on Natural Resources: A Critical Review: Part IV. Special Topics. **2021**, 761-840	0
157	Chemical Transformations of Flax Shive Lignin by the Action of Polysaccharide Fermentation Products. **2021**, 88, 781-788	1
156	Valorization of lignin components into gallate by integrated biological hydroxylation, O-demethylation, and aryl side-chain oxidation. **2021**, 7, eabg4585	8

155	Progress in Bio-Based Phenolic Foams: Synthesis, Properties, and Applications.	1
154	Bio-based material from fruit waste of orange peel for industrial applications. **2021**, 17, 3186-3186	7
153	Alkylation of monomeric, dimeric, and polymeric lignin models through carbon-hydrogen activation using Ru-catalyzed Murai reaction. **2021**, 100, 132475	
152	Tunable Boc modification of lignin and its impact on microbial degradation rate. **2021**, 22, 100455	
151	Bioplastics: A boon or bane?. **2021**, 147, 111237	23
150	Preparation and Characterization of a Robust, High Strength, and Mildew Resistant Fully Biobased Adhesive from Agro-Industrial Wastes.	3
149	Influence of the carbonization temperature on the properties of carbon fibers based on technical softwood kraft lignin blends. **2021**, 5, 100094	1
148	Lignocellulosic biomass based biorefinery: A successful platform towards circular bioeconomy. **2021**, 302, 121086	41
147	Improving kraft pulp mill sustainability by lignosulfonates production from processes residues. **2021**, 317, 128286	7
146	A current advancement on the role of lignin as sustainable reinforcement material in biopolymeric blends. **2021**, 15, 2287-2316	10
145	Structural features of protic ionic liquids and their impact on pretreatment performance for 2G ethanol production. **2021**, 235, 121279	3
144	How far is Lignin from being a biomedical material?. **2022**, 8, 71-94	27
143	Lignin-based nanoparticles. **2021**, 203-219	
142	Effective Biomass Fractionation through Oxygen-Enhanced Alkaline Oxidative Pretreatment. **2021**, 9, 1118-1127	8
141	Recent developments towards performance-enhancing lignin-based polymers. **2021**, 12, 4130-4158	6
140	Research on Short-term Aging of Lignin Modified Asphalt. **2021**, 233, 01125	0
139	Nanotechnology in functional and active food packaging. **2021**, 405-441	2
138	Materials Based on Technical Bulk Lignin. **2021**, 9, 1477-1493	12

137	Preparation and Characterization of Size-Controlled Lignin Nanoparticles with Deep Eutectic Solvents by Nanoprecipitation. **2021**, 26,	10
136	Bioconversion of sugarcane tops to bioethanol and other value added products: An overview. **2021**, 4, 54-68	8
135	Green Adhesives for Biomedical Applications. **2020**, 85-120	1
134	Application of Lignin in Thermoplastic Materials. **2019**, 405-426	3
133	Pleurotus ostreatus: A Biofactory for Lignin-Degrading Enzymes of Diverse Industrial Applications. **2019**, 101-152	1
132	Chemical Modification of Lignin by Polymerization and Depolymerization. **2020**, 139-180	1
131	Advances in Nanotechnology based Strategies for Synthesis of Nanoparticles of Lignin. **2020**, 203-229	4
130	Lignin Composites for Biomedical Applications: Status, Challenges and Perspectives. **2020**, 253-273	3
129	Lignin and Chitosan-Based Materials for Dye and Metal Ion Remediation in Aqueous Systems. **2018**, 55-73	2
128	Review on impregnation issues in laminates manufacture: opportunities and risks of phenol substitution by lignins or other natural phenols in resins. **2017**, 75, 853-876	12
127	Highly efficient lignin removal from the waste liquor of chemical pulping with an integrated polyaluminium chloride-assisted acidification/activated carbon adsorption process. **2020**, 267, 122005	14
126	Effect of incorporation of lignin as bio-polyol on the performance of rigid lightweight wood□olyurethane composite foams. **2020**, 66,	19
125	Synthesis and characterization of novel foams by pyrolysis of lignin. **2019**, 18, 45-56	1
124	UV Protective, Antioxidant, Antibacterial and Compostable Polylactic Acid Composites Containing Pristine and Chemically Modified Lignin Nanoparticles. **2020**, 26,	15
123	Beneficiation of renewable industrial wastes from paper and pulp processing. **2018**, 6, 880-907	11
122	Bio-Renewable Sources for Synthesis of Eco-Friendly Polyurethane Adhesives□eview. **2017**, 07, 57-75	15
121	Lignin-Polyurethane Based Biodegradable Foam. **2018**, 08, 1-10	18
120	Bioplastics: requirement for sustainability. 50-59	1

119	Valorisation of technical lignin in rigid polyurethane foam: a critical evaluation on trends, guidelines and future perspectives.	4
118	Manufacturing process-driven structured materials (MPDSMs): design and fabrication for extrusion-based additive manufacturing. **2021**, ahead-of-print,	0
117	Hydrodeoxygenation of Isoeugenol over Carbon-Supported Pt and Pt–Re Catalysts for Production of Renewable Jet Fuel.	1
116	Antisolvent versus ultrasonication: Bottom-up and top-down approaches to produce lignin nanoparticles (LNPs) with tailored properties. **2021**, 193, 647-660	4
115	Lignin-Based Membrane for Dye Removal. **2022**, 181-213	1
114	Application of Lignin in Thermoplastic Materials. **2018**, 1-22	
113	Encyclopedia of Ionic Liquids. **2019**, 1-22	
112	Recent Molecular Approaches for Development of Value-Added Products From Lignocellulosic Food Waste. **2019**, 43-52	
111	Structure and Properties of Lignin-Based Biopolymers in Polymer Production. **2019**, 375-392	0
110	Lignin and Its Composites. **2020**, 181-202	
109	Analysis of Lignin Using Qualitative and Quantitative Methods. **2020**, 115-138	
108	Evaluation of Methods for the Analysis of Untreated and Processed Lignocellulosic Biomasses. **2020**, 101-117	
107	Rubber Reinforcement with Lignin. **2020**, 123-132	
106	Efficiently conversion of raw lignocellulose to levulinic acid and lignin nano-spheres in acidic lithium bromide-water system by two-step process. **2022**, 343, 126130	0
105	Effect of pH and pH-Shifting on Lignin–Protein Interaction and Properties of Lignin-Protein Polymers. 1	0
104	Green preparation of lignin nanoparticles in an aqueous hydrotropic solution and application in biobased nanocomposite films. **2021**, 75, 463-473	2
103	Biological macromolecules for nutrients delivery. **2022**, 455-477	1
102	Multi-stage pre-treatment of lignocellulosic biomass for multi-product biorefinery: A review. **2022**, 49, 101702	2

101	Synthesis of lignin-based phenol-formaldehyde adhesive - A sustainable alternative to petrochemical. **2021**, 13, 48-57	
100	Cationic Lignin Polymers as Flocculant for Municipal Wastewater. **2021**, 13,	1
99	Monitoring Molecular Weight Changes during Technical Lignin Depolymerization by Operando Attenuated Total Reflectance Infrared Spectroscopy and Chemometrics. **2021**, 14, 5517	1
98	Lignin-enriched residues from bioethanol production: Chemical characterization, isocyanate functionalization and oil structuring properties. **2021**, 195, 412-412	2
97	Green Fabrication of High-Performance, Lignosulfonate-Functionalized, and Reduced-Graphene Oxide StyreneButadiene Rubber Composites.	0
96	Preparation of an oxyalkylated lignin-g- polylactic acid copolymer to improve the compatibility of an organosolv lignin in blended poly(lactic acid) films. 52003	1
95	A Review on Lignin-Based Phenolic Resin Adhesive. 2100434	3
94	An efficient solution to determine surface energy of powders and porous media: Application to untreated and treated lignin. **2022**, 579, 152159	0
93	Lignin fractionation and conversion to bio-based functional products. **2022**, 25, 100594	1
92	Lignin in nanocomposite hydrogels. **2022**, 459-484	
91	Developing a novel direct liquid fuel cell based on pulping liquors.	0
90	Microlignin. **2022**, 1-23	
89	Polymeric composites and nanocomposites containing lignin. **2022**, 293-324	0
88	Synthesis of a biobased resin and its screening as an alternative adsorbent for organic and inorganic micropollutant removal.. **2022**, 1	0
87	Screening of spinning oils for melt-spun lignin-based carbon fiber precursors. 52134	0
86	Dihydrolevoglucosenone (Cyrene) as a versatile biobased solvent for lignin fractionation, processing, and chemistry. **2022**, 24, 338-349	4
85	Biobased vitrimers: Towards sustainable and adaptable performing polymer materials. **2022**, 127, 101515	11
84	From acetone fractionation to lignin-based phenolic and polyurethane resins. **2022**, 178, 114604	2

83	Production of biopolymer-based nanoparticles. **2022**, 53-65	
82	Lignin-based Multi-Scale Cellular Aerogels Assembled from Co-Electrospun Nanofibers for Oil/Water Separation and Energy Storage. **2022**, 135233	2
81	Sustainable Design of Vanillin-Based Vitrimers Using Vinylogous Urethane Chemistry.	9
80	Microbial-Assisted Systems for Lignin-Based Product Generation. **2022**, 555-587	
79	Poly(Lactide)-Modified Lignin Nanofibers: Investigating the Role of Polymer Tacticity on Fiber Properties and Filtration Efficiency. **2022**, 10, 2772-2783	0
78	Chemical Transformation of Lignosulfonates to Lignosulfonamides with Improved Thermal Characteristics. **2022**, 10, 20	2
77	EXTRACTION AND CHARACTERIZATION OF LIGNIN FROM MOROCCAN THUYA. ITS APPLICATION AS ADSORBENT OF METHYLENE BLUE FROM AQUEOUS SOLUTION. **2022**, 56, 69-81	0
76	Bioprospecting lignin biomass into environmentally friendly polymers: Applied perspective to reconcile sustainable circular bioeconomy. 1	3
75	Evaluation of the physical-mechanical and energy properties of coffee husk briquettes with kraft lignin during slow pyrolysis. **2022**, 189, 1007-1019	1
74	Scalable single-step synthesis of lignin-based liquid polyols with ethylene carbonate for polyurethane foams. **2022**, 24, 100793	5
73	Organosolv lignin aggregation behaviour of soluble lignin extract from Miscanthus x giganteus at different ethanol concentrations and its influence on the lignin esterification. **2021**, 8,	2
72	Fungal dye-decolorizing peroxidase diversity: roles in either intra- or extracellular processes.. **2022**,	0
71	Controlled and Prolonged Release Systems of Urea from Micro- and Nanomaterials as an Alternative for Developing a Sustainable Agriculture: A Review. **2022**, 2022, 1-14	0
70	Data_Sheet_1.docx. **2018**,	
69	Presentation_1.pdf. **2020**,	
68	Thermoplasticity reinforcement of ethanol organosolv lignin to improve compatibility in PLA-based ligno-bioplastics: Focusing on the structural characteristics of lignin.. **2022**,	0
67	From residue to resource: new insights into the synthesis of functionalized lignin micro/nanospheres by self-assembly technology for waste resource utilization.	0
66	Lignin as Green Filler in Polymer Composites: Development Methods, Characteristics, and Potential Applications. **2022**, 2022, 1-33	3

65	Green synthesis of sodium lignosulfonate nanoparticles using chitosan for significantly enhanced multifunctional characteristics.. **2022**, 211, 380-389	0
64	Overview on progress in polysaccharides and aliphatic polyesters as coating of water-soluble fertilizers. 1	1
63	Degradation and flammability of bioplastics based on PLA and lignin. **2022**, 111, 107622	0
62	Turning the morphology and wetting ability of self-assembled hierarchical structures from lignin stearoyl esters. **2022**, 183, 114969	1
61	Catalytic Conversion of High S-Lignin to a Sustainable Tri-epoxide Polymer Precursor.	0
60	Molecular manipulation of lignin by phytogenic protein to enable its multifunctionality for water resistance and anti-mildew adhesive. **2022**, 185, 115088	
59	Bifunctional PtRe Catalysts in Hydrodeoxygenation of Isoeugenol as a Model Compound for Renewable Jet Fuel Production.	0
58	Lignin as a Natural Carrier for the Efficient Delivery of Bioactive Compounds: From Waste to Health. **2022**, 27, 3598	3
57	Hybrid amino-terminated lignin microspheres loaded with magnetite and manganese oxide nanoparticles: an effective hazardous oxyanions adsorbent. **2022**, 108009	0
56	Synthesis of oxygen/nitrogen/sulfur codoped hierarchical porous carbon from enzymatically hydrolyzed lignin for high-performance supercapacitors. **2022**, 52, 104992	2
55	Effects of Blending Tobacco Lignin with HDPE on Thermal and Mechanical Properties. **2022**, 15, 4437	0
54	One-Step Lignin Refining Process: The Influence of the Solvent Nature on the Properties and Quality of Fractions. **2022**, 14, 2363	0
53	Novel fertilising products from lignin and its derivatives to enhance plant development and increase the sustainability of crop production. **2022**, 132832	2
52	Hydroxymethylation of technical lignins obtained from different pretreatments for preparation of high-performance rigid polyurethane foam.	1
51	Interactions between biofiller-modified polymeric composites and wood-rotting fungi in terms of their biotechnological applications. **2022**, 186, 115125	
50	Fundamental Insights on the Physical and Chemical Properties of Organosolv Lignin from Norway Spruce Bark.	
49	Advances in sustainable polymeric materials from lignocellulosic biomass. **2022**, 26, 101022	0
48	Plant Polysaccharides in Engineered Pharmaceutical Gels. **2022**, 9, 376	1

47	Affinity of Keratin Peptides for Cellulose and Lignin: A Fundamental Study toward Advanced Bio-Based Materials. **2022**, 38, 9917-9927	
46	The Effect of Addition Nanoparticles Kraft Lignin to the Acrylic-based Provisional Restorations Crown and Bridge. **2022**, 13, 574-581	
45	MnO2 oxidative degradation of lignin and electrochemical recovery study. **2022**, 204, 110091	0
44	Lignin chemical derivatives in Brazilian sugarcane sector: An alternative to make 2G ethanol viable?. **2022**, 369, 133286	
43	Products and applications of different lignins from biorefineries. **2022**, 2, 100036	0
42	AqSO biorefinery: a green and parameter-controlled process for the production of lignin□arbohydrate hybrid materials. **2022**, 24, 6639-6656	0
41	Organic solvent-free production of colloidally stable spherical lignin nanoparticles at high mass concentrations.	0
40	Lignin as a Renewable Building Block for Sustainable Polyurethanes. **2022**, 15, 6182	1
39	Fabrication of high-expansion, fully degradable polylactic acid-based foam with exponent oil/water separation.	0
38	The preparation of stable spherical alkali lignin nanoparticles with great thermal stability and no cytotoxicity. **2022**,	0
37	Multifunctional lignin-poly (lactic acid) biocomposites for packaging applications. 10,	0
36	Kraft lignin and its derivates □A study on the adsorption of mono and multielement metals, potential use for noble metal recycling and an alternative material for solid base catalyst. **2022**, 308, 136538	1
35	Lignin for energy applications □state of the art, life cycle, technoeconomic analysis and future trends. **2022**, 24, 8193-8226	1
34	Lignocellulose Bioconversion. **2022**, 55-82	0
33	Emerging challenges on viability and commercialization of lignin in biobased polymers for food packaging: A review. **2022**, 34, 100969	2
32	Dual-Templating Approach for Engineering Strong, Biodegradable Lignin-Based Foams.	0
31	Lignin-g-polycaprolactone as a form-stable phase change material for thermal energy storage application. **2022**, 56, 106118	0
30	Physicochemical characteristics of lignin-g-PMMA/PLA blend via atom transfer radical polymerization depending on the structural difference of organosolv lignin. **2023**, 226, 279-290	0

29	Kraft lignin valorization: Biofuels and thermoset materials in focus. **2022**, 100738	2
28	Enhanced Mechanical Properties of Composite Hydrogels Containing Fractionated and Purified Lignin.	1
27	Chemical recycling of a lignin-based non-isocyanate polyurethane foam.	0
26	Multilamellar spherical micelles of alkali lignin: dissipative particle dynamics simulations. **2023**, 29,	0
25	Nanogreen is the new future: the conversion of lignin and lignocellulosic wastes into nanomaterials.	0
24	Convenient Cross-Linking Control of Lignin-Based Polymers Influencing Structure Property Relationships. **2023**, 11, 1709-1719	0
23	Effects of the incorporation of modified kraft lignin on the mechanical properties of epoxy adhesive: experimental and theoretical approaches. 1-13	0
22	Wood biomass-derived carbon for high-performance electromagnetic wave absorbing and shielding. **2023**, 208, 255-276	0
21	Recent advances on water-soluble photoinitiators of polymerization. **2023**, 189, 111942	1
20	Biobased Transesterification Vitrimers. **2023**, 44,	0
19	Ionic Liquids as Solvents for the Production of Materials from Biomass. **2022**, 642-663	0
18	Lignin as a green and multifunctional alternative to phenol for resin synthesis. **2023**, 25, 2241-2261	0
17	Tuning the Hydrophilic/Hydrophobic Behavior of Biopolymers. **2022**, 1-35	0
16	Technical kraft lignin from coffee parchment. **2023**,	0
15	Deep Eutectic Solvents for Biotechnology Applications. **2023**, 88, S150-S175	0
14	Current approaches, emerging developments and functional prospects for lignin-based catalysts a review.	1
13	Carbohydrate-based economy: Perspectives and challenges. **2023**, 409-434	0
12	Comparison of pretreatment process of sodium hydroxide and soaking in aqueous ammonia for delignification of rice husk. **2023**,	0

11	Effect of alkalinity on the diffusion of solvent-fractionated lignin through cellulose membranes. **2023**, 30, 3685-3698	0
10	New functional materials from lignocellulosic biomass. **2023**, 209-234	0
9	Sub-micro Organosolv lignin as bio-based epoxy polymer component: A sustainable curing agent and additive.	0
8	Quantification of Phenolic Hydroxyl Groups in Lignin via 19F NMR Spectroscopy. **2023**, 11, 5644-5655	0
7	Prediction of structural properties of activated carbons derived from lignocellulosic biomass components using mixture design of experiments. **2023**, 303, 127715	0
6	Wood Biorefineries. **2023**, 1713-1751	0
5	Combined Catalysis: A Powerful Strategy for Engineering Multifunctional Sustainable Lignin-Based Materials.	0
4	A review on lignin based nanocomposites: Fabrication, characterization and application. **2023**,	0
3	Interfacial activity and Pickering stabilization of kraft lignin particles obtained by solvent fractionation.	0
2	Pickering emulsions produced with kraft lignin colloids destabilized by in situ pH shift: Effect of emulsification energy input and stabilization mechanism. **2023**, 670, 131503	0
1	Biorefinery Products as Naturally-Based Key Raw Materials for Adhesives. **2023**, 119-165	0