Rajdeep Dasgupta

List of Publications by Year
in descending order

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		46918	39575
103	9,217	47	94
papers	citations	h-index	g-index

107	107	107	4434
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	The deep carbon cycle and melting in Earth's interior. Earth and Planetary Science Letters, 2010, 298, 1-13.	1.8	772
2	Partial Melting Experiments of Peridotite + CO2 at 3 GPa and Genesis of Alkalic Ocean Island Basalts. Journal of Petrology, 2007, 48, 2093-2124.	1.1	508
3	Copper Systematics in Arc Magmas and Implications for Crust-Mantle Differentiation. Science, 2012, 336, 64-68.	6.0	480
4	Melting in the Earth's deep upper mantle caused by carbon dioxide. Nature, 2006, 440, 659-662.	13.7	462
5	Deep global cycling of carbon constrained by the solidus of anhydrous, carbonated eclogite under upper mantle conditions. Earth and Planetary Science Letters, 2004, 227, 73-85.	1.8	395
6	Ingassing, Storage, and Outgassing of Terrestrial Carbon through Geologic Time. Reviews in Mineralogy and Geochemistry, 2013, 75, 183-229.	2.2	302
7	Carbon-dioxide-rich silicate melt in the Earthâ€™s upper mantle. Nature, 2013, 493, 211-215.	13.7	290
8	Immiscible Transition from Carbonate-rich to Silicate-rich Melts in the 3â€‰GPa Melting Interval of Eclogite + CO2 and Genesis of Silica-undersaturated Ocean Island Lavas. Journal of Petrology, 2006, 47, 647-671.	1.1	257
9	Compositions of HIMU, EM1, and EM2 from global trends between radiogenic isotopes and major elements in ocean island basalts. Earth and Planetary Science Letters, 2008, 276, 175-186.	1.8	256
10	The redox state of arc mantle using Zn/Fe systematics. Nature, 2010, 468, 681-685.	13.7	232
11	Trace element partitioning between garnet lherzolite and carbonatite at 6.6 and 8.6ÂGPa with applications to the geochemistry of the mantle and of mantle-derived melts. Chemical Geology, 2009, 262, 57-77.	1.4	231
12	Melting in the Feâ€“C system to 70ÂGPa. Earth and Planetary Science Letters, 2009, 284, 157-167.	1.8	216
13	Mineralogical heterogeneities in the Earth's mantle: Constraints from Mn, Co, Ni and Zn partitioning during partial melting. Earth and Planetary Science Letters, 2011, 307, 395-408.	1.8	194
14	Reaction between MORB-eclogite derived melts and fertile peridotite and generation of ocean island basalts. Earth and Planetary Science Letters, 2012, 329-330, 97-108.	1.8	194
15	Major element chemistry of ocean island basalts â€” Conditions of mantle melting and heterogeneity of mantle source. Earth and Planetary Science Letters, 2010, 289, 377-392.	1.8	166
16	The H/C ratios of Earth's near-surface and deep reservoirs, and consequences for deep Earth volatile cycles. Chemical Geology, 2009, 262, 4-16.	1.4	160
17	Upside-down differentiation and generation of a â€˜primordialâ€™ lower mantle. Nature, 2010, 463, 930-933.	13.7	149
18	Continental arc-island arc fluctuations, growth of crustal carbonates, and long-term climate change. , 2013, 9, 21-36.		134

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19	Carbon solution and partitioning between metallic and silicate melts in a shallow magma ocean: Implications for the origin and distribution of terrestrial carbon. Geochimica Et Cosmochimica Acta, 2013, 102, 191-212.	1.6	129
20	Fe2+â€“Mg partitioning between olivine and basaltic melts: Applications to genesis of olivine-phyric shergottites and conditions of melting in the Martian interior. Earth and Planetary Science Letters, 2011, 304, 527-537.	1.8	126
21	Effect of variable carbonate concentration on the solidus of mantle peridotite. American Mineralogist, 2007, 92, 370-379.	0.9	121
22	The effect of bulk composition on the solidus of carbonated eclogite from partial melting experiments at 3ÂGPa. Contributions To Mineralogy and Petrology, 2005, 149, 288-305.	1.2	119
23	High-pressure melting relations in Feâ€“Câ€“S systems: Implications for formation, evolution, and structure of metallic cores in planetary bodies. Geochimica Et Cosmochimica Acta, 2009, 73, 6678-6691.	1.6	115
24	Carbonate-fluxed Melting of MORB-like Pyroxenite at 2{middle dot}9 GPa and Genesis of HIMU Ocean Island Basalts. Journal of Petrology, 2010, 51, 2067-2088.	1.1	114
25	Melting phase relation of nominally anhydrous, carbonated pelitic-eclogite at 2.5â€“3.0ÂGPa and deep cycling of sedimentary carbon. Contributions To Mineralogy and Petrology, 2011, 161, 743-763.	1.2	114
26	Reactive Infiltration of MORB-Eclogite-Derived Carbonated Silicate Melt into Fertile Peridotite at 3 GPa and Genesis of Alkalic Magmas. Journal of Petrology, 2013, 54, 2267-2300.	1.1	113
27	Carbon solubility in core melts in a shallow magma ocean environment and distribution of carbon between the Earthâ€™s core and the mantle. Geochimica Et Cosmochimica Acta, 2008, 72, 4627-4641.	1.6	107
28	Water follows carbon: CO2 incites deep silicate melting and dehydration beneath mid-ocean ridges. Geology, 2007, 35, 135.	2.0	102
29	Partial melting of fertile peridotite fluxed by hydrous rhyolitic melt at 2â€“3 GPa: implications for mantle wedge hybridization by sediment melt and generation of ultrapotassic magmas in convergent margins. Contributions To Mineralogy and Petrology, 2015, 169, 1.	1.2	97
30	Rise of Earthâ€™s atmospheric oxygen controlled by efficient subduction of organic carbon. Nature Geoscience, 2017, 10, 387-392.	5.4	95
31	Partitioning of carbon between Fe-rich alloy melt and silicate melt in a magma ocean â€“ Implications for the abundance and origin of volatiles in Earth, Mars, and the Moon. Geochimica Et Cosmochimica Acta, 2014, 139, 447-471.	1.6	92
32	A modified iterative sandwich method for determination of near-solidus partial melt compositions. II. Application to determination of near-solidus melt compositions of carbonated peridotite. Contributions To Mineralogy and Petrology, 2007, 154, 647-661.	1.2	89
33	Effect of variable CO₂on eclogite-derived andesite and lherzolite reaction at 3 GPa-Implications for mantle source characteristics of alkalic ocean island basalts. Geochemistry, Geophysics, Geosystems, 2014, 15, 1533-1557.	1.0	78
34	Carbon and sulfur budget of the silicate Earth explained by accretion of differentiated planetaryÂembryos. Nature Geoscience, 2016, 9, 781-785.	5.4	75
35	Fluid-present melting of sulfide-bearing ocean-crust: Experimental constraints on the transport of sulfur from subducting slab to mantle wedge. Geochimica Et Cosmochimica Acta, 2013, 110, 106-134.	1.6	74
36	Delivery of carbon, nitrogen, and sulfur to the silicate Earth by a giant impact. Science Advances, 2019, 5, eaau3669.	4.7	74

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37	The effect of carbonates on near-solidus melting of pelite at 3GPa: Relative efficiency of H2O and CO2 subduction. Earth and Planetary Science Letters, 2012, 319-320, 185-196.	1.8	73
38	The Fate of Sulfur During Fluid-Present Melting of Subducting Basaltic Crust at Variable Oxygen Fugacity. Journal of Petrology, 2014, 55, 1019-1050.	1.1	73
39	The effects of sulfur, silicon, water, and oxygen fugacity on carbon solubility and partitioning in Fe-rich alloy and silicate melt systems at 3 GPa and 1600â€‰Â°C: Implications for coreâ€“mantle differentiation and degassing of magma oceans and reduced planetary mantles. Earth and Planetary Science Letters, 2015, 415, 54-66.	1.8	68
40	Effects of water, depth and temperature on partial melting of mantle-wedge fluxed by hydrous sediment-melt in subduction zones. Geochimica Et Cosmochimica Acta, 2016, 195, 226-243.	1.6	68
41	Flux of carbonate melt from deeply subducted pelitic sediments: Geophysical and geochemical implications for the source of Central American volcanic arc. Geophysical Research Letters, 2012, 39, .	1.5	62
42	Slabâ€“mantle interaction, carbon transport, and kimberlite generation in the deep upper mantle. Earth and Planetary Science Letters, 2019, 506, 38-52.	1.8	61
43	Compressibility change in iron-rich melt and implications for core formation models. Earth and Planetary Science Letters, 2011, 306, 118-122.	1.8	56
44	Sulfur concentration of martian basalts at sulfide saturation at high pressures and temperatures â€“ Implications for deep sulfur cycle on Mars. Geochimica Et Cosmochimica Acta, 2014, 131, 227-246.	1.6	55
45	Volatile-bearing partial melts beneath oceans and continentsâ€“Where, how much, and of what compositions?. Numerische Mathematik, 2018, 318, 141-165.	0.7	54
46	Great Oxidation and Lomagundi events linked by deep cycling and enhanced degassing of carbon. Nature Geoscience, 2020, 13, 71-76.	5.4	54
47	Feâ€“Niâ€“Cuâ€“Câ€“S phase relations at high pressures and temperatures â€“ The role of sulfur in carbon storage and diamond stability at mid- to deep-upper mantle. Earth and Planetary Science Letters, 2015, 412, 132-142.	1.8	52
48	CO2 solubility and speciation in rhyolitic sediment partial melts at 1.5â€“3.0GPa â€“ Implications for carbon flux in subduction zones. Geochimica Et Cosmochimica Acta, 2014, 124, 328-347.	1.6	51
49	Recommended mineral-melt partition coefficients for FRTEs (Cu), Ga, and Ge during mantle melting. American Mineralogist, 2015, 100, 2533-2544.	0.9	45
50	The fate of sulfide during decompression melting of peridotite â€“ implications for sulfur inventory of the MORB-source depleted upper mantle. Earth and Planetary Science Letters, 2017, 459, 183-195.	1.8	44
51	Planetesimal rings as the cause of the Solar Systemâ€™s planetary architecture. Nature Astronomy, 2022, 6, 357-366.	4.2	43
52	Constraints on the depth and thermal vigor of melting in the Martian mantle. Journal of Geophysical Research E: Planets, 2015, 120, 109-122.	1.5	42
53	Effect of melt composition on crustal carbonate assimilation: Implications for the transition from calcite consumption to skarnification and associated <scp>CO</scp>₂ degassing. Geochemistry, Geophysics, Geosystems, 2016, 17, 3893-3916.	1.0	39
54	Core-mantle fractionation of carbon in Earth and Mars: The effects of sulfur. Geochimica Et Cosmochimica Acta, 2018, 238, 477-495.	1.6	38

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55	High pressure, nearâ€liquidus phase equilibria of the Home Plate basalt Fastball and melting in the Martian mantle. Geophysical Research Letters, 2010, 37, .	1.5	37
56	Effect of fluorine on near-liquidus phase equilibria of an Feâ€“Mg rich basalt. Chemical Geology, 2012, 312-313, 118-126.	1.4	37
57	Nonstoichiometry and growth of some Fe carbides. Contributions To Mineralogy and Petrology, 2013, 166, 935-957.	1.2	37
58	Hydrous basaltâ€“limestone interaction at crustal conditions: Implications for generation of ultracalcic melts and outflux of CO2 at volcanic arcs. Earth and Planetary Science Letters, 2015, 427, 202-214.	1.8	37
59	The speciation of carbon, nitrogen, and water in magma oceans and its effect on volatile partitioning between major reservoirs of the Solar System rocky bodies. Geochimica Et Cosmochimica Acta, 2020, 280, 281-301.	1.6	37
60	New bulk sulfur measurements of Martian meteorites and modeling the fate of sulfur during melting and crystallization â€“ Implications for sulfur transfer from Martian mantle to crustâ€“atmosphere system. Earth and Planetary Science Letters, 2015, 409, 157-167.	1.8	36
61	New high pressure experiments on sulfide saturation of high-FeOâˆ— basalts with variable TiO2 contents â€“ Implications for the sulfur inventory of the lunar interior. Geochimica Et Cosmochimica Acta, 2018, 222, 319-339.	1.6	36
62	The fate of nitrogen during core-mantle separation on Earth. Geochimica Et Cosmochimica Acta, 2019, 251, 87-115.	1.6	34
63	A very early origin of isotopically distinct nitrogen in inner Solar System protoplanets. Nature Astronomy, 2021, 5, 356-364.	4.2	34
64	Carbon contents in reduced basalts at graphite saturation: Implications for the degassing of Mars, Mercury, and the Moon. Journal of Geophysical Research E: Planets, 2017, 122, 1300-1320.	1.5	32
65	High Pressure Phase Relations of a Depleted Peridotite Fluxed by CO₂â€H₂Oâ€Bearing Siliceous Melts and the Origin of Midâ€Lithospheric Discontinuity. Geochemistry, Geophysics, Geosystems, 2018, 19, 595-620.	1.0	30
66	A Framework for Understanding Whole-Earth Carbon Cycling. , 2019, , 313-357.		30
67	Experimental determination of CO2 content at graphite saturation along a natural basalt-peridotite melt join: Implications for the fate of carbon in terrestrial magma oceans. Earth and Planetary Science Letters, 2017, 466, 115-128.	1.8	29
68	Effect of sulfate on the basaltic liquidus and Sulfur Concentration at Anhydrite Saturation (SCAS) of hydrous basalts â€“ Implications for sulfur cycle in subduction zones. Chemical Geology, 2019, 522, 162-174.	1.4	25
69	Thermobarometry of CO2-rich, silica-undersaturated melts constrains cratonic lithosphere thinning through time in areas of kimberlitic magmatism. Earth and Planetary Science Letters, 2020, 550, 116549.	1.8	25
70	Rates of protoplanetary accretion and differentiation set nitrogen budget of rocky planets. Nature Geoscience, 2021, 14, 369-376.	5.4	25
71	An upper limit on late accretion and water delivery in the TRAPPIST-1 exoplanet system. Nature Astronomy, 2022, 6, 80-88.	4.2	25
72	A CO2 solubility model for silicate melts from fluid saturation to graphite or diamond saturation. Chemical Geology, 2018, 487, 23-38.	1.4	24

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73	Decarbonation in the Ca-Mg-Fe carbonate system at mid-crustal pressure as a function of temperature and assimilation with arc magmas â€“ Implications for long-term climate. Chemical Geology, 2018, 492, 30-48.	1.4	24
74	Assessing the presence of volatile-bearing mineral phases in the cratonic mantle as a possible cause of mid-lithospheric discontinuities. Earth and Planetary Science Letters, 2021, 553, 116602.	1.8	24
75	Sulfur extraction via carbonated melts from sulfide-bearing mantle lithologies â€“ Implications for deep sulfur cycle and mantle redox. Geochimica Et Cosmochimica Acta, 2020, 269, 376-397.	1.6	23
76	The Effect of a Strong Pressure Bump in the Sunâ€™s Natal Disk: Terrestrial Planet Formation via Planetesimal Accretion Rather than Pebble Accretion. Astrophysical Journal, 2021, 915, 62.	1.6	23
77	Sulfur Inventory of Ocean Island Basalt Source Regions Constrained by Modeling the Fate of Sulfide during Decompression Melting of a Heterogeneous Mantle. Journal of Petrology, 2018, 59, 1281-1308.	1.1	22
78	Partial melting of a depleted peridotite metasomatized by a MORB-derived hydrous silicate melt â€“ Implications for subduction zone magmatism. Geochimica Et Cosmochimica Acta, 2020, 290, 137-161.	1.6	22
79	Siderophile element partitioning between cohenite and liquid in the Feâ€“Niâ€“Sâ€“C system and implications for geochemistry of planetary cores and mantles. Geochimica Et Cosmochimica Acta, 2013, 120, 239-250.	1.6	20
80	Phase Relations of a Depleted Peridotite Fluxed by a CO₂â€H₂O Fluidâ€"Implications for the Stability of Partial Melts Versus Volatileâ€Bearing Mineral Phases in the Cratonic Mantle. Journal of Geophysical Research: Solid Earth, 2019, 124, 10089-10106.	1.4	20
81	Origin and Early Differentiation of Carbon and Associated Life-Essential Volatile Elements on Earth. , 2019, , 4-39.		20
82	Constraining Ancient Magmatic Evolution on Mars Using Crystal Chemistry of Detrital Igneous Minerals in the Sedimentary Bradbury Group, Gale Crater, Mars. Journal of Geophysical Research E: Planets, 2020, 125, e2020JE006467.	1.5	20
83	CO2 content of andesitic melts at graphite-saturated upper mantle conditions with implications for redox state of oceanic basalt source regions and remobilization of reduced carbon from subducted eclogite. Contributions To Mineralogy and Petrology, 2017, 172, 1.	1.2	19
84	Effect of chlorine on near-liquidus phase equilibria of an Feâ€“Mg-rich tholeiitic basalt. Contributions To Mineralogy and Petrology, 2014, 168, 1.	1.2	18
85	Pressure and temperature dependence of CO2 solubility in hydrous rhyolitic melt: implications for carbon transfer to mantle source of volcanic arcs via partial melt of subducting crustal lithologies. Contributions To Mineralogy and Petrology, 2015, 169, 1.	1.2	18
86	A modified iterative sandwich method for determination of near-solidus partial melt compositions. I. Theoretical considerations. Contributions To Mineralogy and Petrology, 2007, 154, 635-645.	1.2	16
87	Oceanic lavas sampling the high-³He/⁴He mantle reservoir: Primitive, depleted, or re-enriched?. American Mineralogist, 2015, 100, 2066-2081.	0.9	14
88	The influence of plate tectonic style on melt production and CO2 outgassing flux at mid-ocean ridges. Earth and Planetary Science Letters, 2019, 511, 154-163.	1.8	14
89	Redox state of the convective mantle from CO2-trace element systematics of oceanic basalts. Geochemical Perspectives Letters, 0, , 17-21.	1.0	14
90	Improving the reliability of Fe- and S-XANES measurements in silicate glasses: Correcting beam damage and identifying Fe-oxide nanolites in hydrous and anhydrous melt inclusions. Chemical Geology, 2021, 586, 120610.	1.4	14

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91	The contribution to exogenic CO₂ by contact metamorphism at continental arcs: A coupled model of fluid flux and metamorphic decarbonation. Numerische Mathematik, 2019, 319, 631-657.	0.7	12
92	Volatile-bearing Partial Melts in the Lithospheric and Sub-Lithospheric Mantle on Earth and Other Rocky Planets. Reviews in Mineralogy and Geochemistry, 2022, 87, 575-606.	2.2	12
93	Nitrogen Content in the Earth's Outer Core. Geophysical Research Letters, 2019, 46, 89-98.	1.5	10
94	The effect of carbon concentration on its core-mantle partitioning behavior in inner Solar System rocky bodies. Earth and Planetary Science Letters, 2021, 571, 117090.	1.8	10
95	The Solidus and Melt Productivity of Nominally Anhydrous Martian Mantle Constrained by New High Pressureâ€Temperature Experimentsâ€”Implications for Crustal Production and Mantle Source Evolution. Journal of Geophysical Research E: Planets, 2020, 125, e2019JE006078.	1.5	7
96	Oxygen fugacity range of subducting crust inferred from fractionation of trace elements during fluid-present slab melting in the presence of anhydrite versus sulfide. Geochimica Et Cosmochimica Acta, 2022, 325, 214-231.	1.6	7
97	Partitioning of chalcophile and highly siderophile elements (HSEs) between sulfide and carbonated melts â€“ Implications for HSE systematics of kimberlites, carbonatites, and melt metasomatized mantle domains. Geochimica Et Cosmochimica Acta, 2021, 305, 130-147.	1.6	6
98	Earthâ€™s core could be the largest terrestrial carbon reservoir. Communications Earth & Environment, 2021, 2, .	2.6	6
99	Carbon recycling efficiency in subduction zones constrained by the effects of H2O-CO2 fluids on partial melt compositions in the mantle wedge. Earth and Planetary Science Letters, 2022, 588, 117578.	1.8	6
100	Introduction to Deep Carbon: Past to Present. , 2019, , 1-3.		2
101	The Link between the Physical and Chemical Properties of Carbon-Bearing Melts and Their Application for Geophysical Imaging of Earthâ€™s Mantle. , 2019, , 163-187.		1
102	Continental - island arc fluctuations through time and the Eocene transition from a greenhouse to an icehouse world. Rendiconti Online Societa Geologica Italiana, 0, 31, 62-63.	0.3	1
103	Effects of phosphorus on partial melting of the Martian Mantle and compositions of the Martian Crust. Geochimica Et Cosmochimica Acta, 2022, 327, 229-246.	1.6	0