# Akira Kouchi

List of Publications by Year
in descending order



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|---|---|---|---|
| 63 papers | 3,445 citations | 159585 30 h-index | 138484 58 g-index |
| 63 all docs | 63 docs citations | 63 times ranked | 1704 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Efficient Formation of Formaldehyde and Methanol by the Addition of Hydrogen Atoms to CO in H[TINF]2[/TINF]O-CO Ice at 10 K. Astrophysical Journal, 2002, 571, L173-L176. | 4.5 | 443 |
| 2 | Ice surface reactions: A key to chemical evolution in space. Progress in Surface Science, 2008, 83, 439-489. | 8.3 | 185 |
| 3 | Hydrogenation of CO on Pure Solid CO and COâ€H2O Mixed Ice. Astrophysical Journal, 2004, 616, 638-642. | 4.5 | 176 |
| 4 | Formation of hydrogen peroxide and water from the reaction of cold hydrogen atoms with solid oxygen at 10K. Chemical Physics Letters, 2008, 456, 27-30. | 2.6 | 158 |
| 5 | The Dependence of H 2 CO and CH 3 OH Formation on the Temperature and Thickness of H 2 O-CO Ice during the Successive Hydrogenation of CO. Astrophysical Journal, 2003, 588, L121-L124. | 4.5 | 149 |
| 6 | Amorphization of cubic ice by ultraviolet irradiation. Nature, 1990, 344, 134-135. | 27.8 | 135 |
| 7 | FORMATION OF COMPACT AMORPHOUS H<sub>2</sub>O ICE BY CODEPOSITION OF HYDROGEN ATOMS WITH OXYGEN MOLECULES ON GRAIN SURFACES. Astrophysical Journal, 2009, 701, 464-470. | 4.5 | 115 |
| 8 | Conversion of H2CO to CH3OH by Reactions of Cold Atomic Hydrogen on Ice Surfaces below 20 K. Astrophysical Journal, 2004, 614, 1124-1131. | 4.5 | 107 |
| 9 | DIRECT MEASUREMENTS OF HYDROGEN ATOM DIFFUSION AND THE SPIN TEMPERATURE OF NASCENT H <sub>2</sub> MOLECULE ON AMORPHOUS SOLID WATER. Astrophysical Journal Letters, 2010, 714, L233-L237. | 8.3 | 98 |
| 10 | Vapour pressure of amorphous H2O ice and its astrophysical implications. Nature, 1987, 330, 550-552. | 27.8 | 97 |
| 11 | WATER FORMATION THROUGH A QUANTUM TUNNELING SURFACE REACTION, OH + H<sub>2</sub>, AT 10 K. Astrophysical Journal, 2012, 749, 67. | 4.5 | 97 |
| 12 | Evaporation of H2Oâ€”CO ice and its astrophysical implications. Journal of Crystal Growth, 1990, 99, 1220-1226. | 1.5 | 93 |
| 13 | H-D Substitution in Interstellar Solid Methanol: A Key Route for D Enrichment. Astrophysical Journal, 2005, 624, L29-L32. | 4.5 | 92 |
| 14 | EXPERIMENTAL STUDY OF CO <sub>2</sub> FORMATION BY SURFACE REACTIONS OF NON-ENERGETIC OH RADICALS WITH CO MOLECULES. Astrophysical Journal Letters, 2010, 712, L174-L178. | 8.3 | 92 |
| 15 | REACTION ROUTES IN THE CO-H<sub>2</sub>CO-d<sub>n</sub>-CH<sub>3</sub>OH-d<sub>m</sub>SYSTEM CLARIFIED FROM H(D) EXPOSURE OF SOLID FORMALDEHYDE AT LOW TEMPERATURES. Astrophysical Journal, 2009, 702, 291-300. | 4.5 | 89 |
| 16 | Laboratory Simulation of Competition between Hydrogenation and Photolysis in the Chemical Evolution of H<sub>2</sub>Oâ€CO Ice Mixtures. Astrophysical Journal, 2007, 668, 1001-1011. | 4.5 | 79 |
| 17 | THE MECHANISM OF SURFACE DIFFUSION OF H AND D ATOMS ON AMORPHOUS SOLID WATER: EXISTENCE OF VARIOUS POTENTIAL SITES. Astrophysical Journal, 2012, 757, 185. | 4.5 | 75 |
| 18 | Interstellar dust, chirality, comets and the origins of life: Life from dead stars?. Journal of Biological Physics, 1995, 20, 61-70. | 1.5 | 68 |

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|---|---|---|---|
| 19 | Temperature, composition, and hydrogen isotope effect in the hydrogenation of CO on amorphous ice surface at 10â€“20K. Journal of Chemical Physics, 2007, 126, 204707. | 3.0 | 67 |
| 20 | Nucleobase synthesis in interstellar ices. Nature Communications, 2019, 10, 4413. | 12.8 | 65 |
| 21 | Rapid Growth of Asteroids Owing to Very Sticky Interstellar Organic Grains. Astrophysical Journal, 2002, 566, L121-L124. | 4.5 | 63 |
| 22 | Statistical ortho-to-para ratio of water desorbed from ice at 10 kelvin. Science, 2016, 351, 65-67. | 12.6 | 61 |
| 23 | Effective Rate Constants for the Surface Reaction between Solid Methanol and Deuterium Atoms at 10 K. Journal of Physical Chemistry A, 2007, 111, 3016-3028. | 2.5 | 59 |
| 24 | An infrared measurement of chemical desorption from interstellar ice analogues. Nature Astronomy, 2018, 2, 228-232. | 10.1 | 59 |
| 25 | Signatures of Quantum-Tunneling Diffusion of Hydrogen Atoms on Water Ice at 10ÂK. Physical Review Letters, 2015, 115, 133201. | 7.8 | 47 |
| 26 | Dependence of the effective rate constants for the hydrogenation of CO on the temperature and composition of the surface. Planetary and Space Science, 2006, 54, 1107-1114. | 1.7 | 46 |
| 27 | Novel Routes for Diamond Formation in Interstellar Ices and Meteoritic Parent Bodies. Astrophysical Journal, 2005, 626, L129-L132. | 4.5 | 40 |
| 28 | Experimental studies of surface reactions among OH radicals that yield H2O and CO2 at 40â€“60 K. Physical Chemistry Chemical Physics, 2011, 13, 15792. | 2.8 | 39 |
| 29 | FTIR study of ammonia formation via the successive hydrogenation of N atoms trapped in a solid N2 matrix at low temperatures. Physical Chemistry Chemical Physics, 2011, 13, 15798. | 2.8 | 36 |
| 30 | Evaporation of Interstellar Organic Materials in the Solar Nebula. Astrophysical Journal, 2003, 592, 1252-1262. | 4.5 | 32 |
| 31 | Liquid-like behavior of UV-irradiated interstellar ice analog at low temperatures. Science Advances, 2017, 3, eaao2538. | 10.3 | 32 |
| 32 | Reaction kinetics and isotope effect of water formation by the surface reaction of solid H<sub>2</sub>O<sub>2</sub>with H atoms at low temperatures. Faraday Discussions, 2014, 168, 185. | 3.2 | 29 |
| 33 | Transmission Electron Microscopy Study of the Morphology of Ices Composed of H<sub>2</sub>O, CO<sub>2</sub>, and CO on Refractory Grains. Astrophysical Journal, 2021, 918, 45. | 4.5 | 27 |
| 34 | DEUTERIUM FRACTIONATION DURING AMINO ACID FORMATION BY PHOTOLYSIS OF INTERSTELLAR ICE ANALOGS CONTAINING DEUTERATED METHANOL. Astrophysical Journal Letters, 2016, 827, L18. | 8.3 | 26 |
| 35 | Quantum tunneling observed without its characteristic large kinetic isotope effects. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 7438-7443. | 7.1 | 25 |
| 36 | Surface Temperature Dependence of Hydrogen Ortho-Para Conversion on Amorphous Solid Water. Physical Review Letters, 2016, 116, 253201. | 7.8 | 25 |

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| 37 | The role of sticky interstellar organic material in the formation of asteroids. Meteoritics and Planetary Science, 2002, 37, 1975-1983. | 1.6 | 23 |
| 38 | Direct Measurements of Activation Energies for Surface Diffusion of CO and CO<sub>2</sub> on Amorphous Solid Water Using In Situ Transmission Electron Microscopy. Astrophysical Journal Letters, 2020, 891, L22. | 8.3 | 22 |
| 39 | Matrix sublimation method for the formation of high-density amorphous ice. Chemical Physics Letters, 2016, 658, 287-292. | 2.6 | 20 |
| 40 | Alteration of interstellar organic materials in meteorites' parent bodies. Proceedings of the Japan Academy Series B: Physical and Biological Sciences, 2002, 78, 277-281. | 3.8 | 19 |
| 41 | Evolution of Morphological and Physical Properties of Laboratory Interstellar Organic Residues with Ultraviolet Irradiation. Astrophysical Journal, 2017, 837, 35. | 4.5 | 17 |
| 42 | Precometary organic matter: A hidden reservoir of water inside the snow line. Scientific Reports, 2020, 10, 7755. | 3.3 | 16 |
| 43 | An Experimental Study of Chemical Desorption for Phosphine in Interstellar Ice. Astrophysical Journal Letters, 2020, 898, L52. | 8.3 | 16 |
| 44 | Hydrogen isotopic substitution of solid methylamine through atomic surface reactions at low temperatures: A potential contribution to the D/H ratio of methylamine in molecular clouds. Meteoritics and Planetary Science, 2014, 49, 117-132. | 1.6 | 15 |
| 45 | Photostimulated desorption of OH radicals from amorphous solid water: Evidence for the interaction of visible light with an OH-ice complex. Physical Review A, 2020, 102, . | 2.5 | 15 |
| 46 | Deuterium Fractionation upon the Formation of Hexamethylenetetramines through Photochemical Reactions of Interstellar Ice Analogs Containing Deuterated Methanol Isotopologues. Astrophysical Journal, 2017, 849, 122. | 4.5 | 13 |
| 47 | Physico-chemical Behavior of Hydrogen Sulfide Induced by Reactions with H and D Atoms on Different Types of Ice Surfaces at Low Temperature. Astrophysical Journal, 2019, 874, 124. | 4.5 | 13 |
| 48 | Formation of chiral CO polyhedral crystals on icy interstellar grains. Monthly Notices of the Royal Astronomical Society, 2021, 505, 1530-1542. | 4.4 | 13 |
| 49 | Interactions of Atomic and Molecular Hydrogen with a Diamond-like Carbon Surface: H<sub>2</sub> Formation and Desorption. Astrophysical Journal, 2019, 878, 23. | 4.5 | 11 |
| 50 | Rapid Ortho-to-para Nuclear Spin Conversion of H<sub>2</sub> on a Silicate Dust Surface. Astrophysical Journal, 2021, 908, 234. | 4.5 | 11 |
| 51 | Efficient Formation Pathway of Methyl Formate: The Role of OH Radicals on Ice Dust. Astrophysical Journal Letters, 2021, 921, L13. | 8.3 | 11 |
| 52 | Diffusion Activation Energy and Desorption Activation Energy for Astrochemically Relevant Species on Water Ice Show No Clear Relation. Astrophysical Journal Letters, 2022, 933, L16. | 8.3 | 11 |
| 53 | UV-ray irradiation never causes amorphization of crystalline CO2: A transmission electron microscopy study. Chemical Physics Letters, 2020, 760, 137999. | 2.6 | 10 |
| 54 | Successive H-atom Addition to Solid OCS on Compact Amorphous Solid Water. Astrophysical Journal, 2021, 922, 146. | 4.5 | 10 |

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| 55 | Hydrogenâ€“deuterium substitution in solid ethanol by surface reactions at low temperatures. Monthly Notices of the Royal Astronomical Society, 2016, 462, 689-695. | 4.4 | 9 |
| 56 | Experimental and Computational Studies on the Physicochemical Behavior of Phosphine Induced by Reactions with H and D Atoms on Interstellar Ice Grains. Astrophysical Journal, 2021, 918, 73. | 4.5 | 9 |
| 57 | Diffusive Hydrogenation Reactions of CO Embedded in Amorphous Solid Water at Elevated Temperatures â^¼70 K. Astrophysical Journal, 2020, 900, 187. | 4.5 | 9 |
| 58 | UV-Induced Formation of Ice XI Observed Using an Ultra-High Vacuum Cryogenic Transmission Electron Microscope and its Implications for Planetary Science. Frontiers in Chemistry, 2021, 9, 799851. | 3.6 | 7 |
| 59 | Delivery of Electrons by Proton-Hole Transfer in Ice at 10 K: Role of Surface OH Radicals. Journal of Physical Chemistry Letters, 2021, 12, 704-710. | 4.6 | 6 |
| 60 | Molecular and isotopic compositions of nitrogen-containing organic molecules formed during UV-irradiation of simulated interstellar ice. Geochemical Journal, 2019, 53, 5-20. | 1.0 | 6 |
| 61 | Measurements of Ortho-to-para Nuclear Spin Conversion of H<sub>2</sub> on Low-temperature Carbonaceous Grain Analogs: Diamond-like Carbon and Graphite. Astrophysical Journal, 2021, 923, 71. | 4.5 | 5 |
| 62 | Penetration of Nonenergetic Hydrogen Atoms into Amorphous Solid Water and their Reaction with Embedded Benzene and Naphthalene. Astrophysical Journal, 2022, 933, 138. | 4.5 | 2 |
| 63 | The role of interstellar organic materials in the formation and evolution of asteroids and meteorites. Ganseki Kobutsu Kagaku, 2005, 34, 114-126. | 0.1 | 0 |