ALESSANDRA RICCA
NASA Ames Research Center/ SETI Institute
Space Science Division MS 245-3
Moffett Field, CA 94035
Phone: 1-650-604-5410; Fax: 1-650-604-6779
Email : Alessandra.Ricca-1@nasa.gov

Education and Postdoctoral Institutions

12/88: B.S., Chemistry, University of Geneva, Switzerland
3/89: M.S., Chemistry, University of Geneva, Switzerland
7/93: Ph.D., Chemistry, University of Geneva, Switzerland
9/93-9/95: National Research Council Research Associateship, NASA Ames
9/95-9/96: NASA Ames Postdoctoral Fellow
9/96-6/97: Kings College, London, UK, Postdoctoral Fellow
6/97-4/98: Stanford University, Postdoctoral Fellow

Professional Appointments

5/05-present: Principal Investigator; SETI Institute
4/98-7/09: Senior Research Scientist; ELORET Corp. at NASA Ames Research Center
1/04-9/05: Project Scientist; UARC/UC Santa Cruz at NASA Ames Research Center
9/05-1/06: Instructor for Introductory Chemistry laboratory course, San Jose State University

Selected Refereed Publications

"Photochemistry of Polycyclic Aromatic Hydrocarbons (PAHs) in Water Ice II: mid-IR spectroscopy, new photoproducts and PAH erosion", A. M. Cook, A. Ricca, A. L. Mattioda, J. Bouwman, J. E. Roser, H. Linnartz, J. Bregman, L. J. Allamandola, (2014) submitted to ApJ.
"Magic PAHs", E. Peeters, L. J. Allamandola, A. G. G. M. Tielens, C. W. Bauschlicher, A. Ricca, M. G. Wolfire, (2014) submitted to ApJ.
"PAH Clusters as Sources of Interstellar Infrared Emission", J. E. Roser, A. Ricca, (2014) submitted to ApJ.
"Anthracene clusters and the interstellar infrared emission features", J. E. Roser, A. Ricca and L. J. Allamandola, ApJ (2014) 783, 97.
"The Organism/Organic Exposure to Orbital Stresses (O/OREOS) satellite: radiation exposure in low-earth orbit and supporting laboratory studies of iron tetraphenylporphyrin chloride", A. M. Cook, A. L. Mattioda, A. J. Ricco, R. C. Quinn, A. Elsaesser, P. Ehrenfreund, A. Ricca, N. C. Jones, S. V. Hoffmann, Astrobiology (2014) 14, 87.
"The NASA Ames PAH IR spectroscopic database version 2.00: updated content, web site, and on(off)line tools", C. Boersma, C. W. Bauschlicher, A. Ricca, A. L. Mattioda, J. Cami, E. Peeters, F. Sanchez de Armas, G. Puerta Saborido, D. M. Hudgins, and L. J. Allamandola, ApJS (2014) 211, 8.
"Loss of a C_2H_n fragment from pyrene and circumcoronene", C. W. Bauschlicher and A. Ricca, Theo. Chem. Acc. (2014), 133, 1479.

"The infrared spectra of $C_{96}H_{25}$ compared with that of $C_{96}H_{24}$", C. W. Bauschlicher and A. Ricca, Theo. Chem. Acc. (2014), 133, 1454.
"The structure, origin, and evolution of interstellar hydrocarbon grains", J. E. Chiar, A. G. G. M. Tielens, A. J. Adamson, A. Ricca, ApJ (2013), 770, 78.
"Infrared Vibrational and Electronic Transitions in the Dibenzopolyacene Family", A. L. Mattioda, C. W. Bauschlicher, J. Bregman, D. M. Hudgins, L. J. Allamandola, and A. Ricca, Spectrochim. Acta A (2013), 130, 639.
"The infrared spectroscopy of neutral polycyclic aromatic hydrocarbon clusters", A. Ricca, C. W. Bauschlicher, and L. J. Allamandola, ApJ (2013), 776, 31.
"The infrared spectra of polycyclic aromatic hydrocarbons with some or all hydrogen atoms removed", C. W. Bauschlicher and A. Ricca, ApJ (2013), 776, 102.
"Naphthalene dimer and naphthalene dimer with Ar: calibration calculations and the effect of Ar
on the stability and vibrational frequencies", C. W. Bauschlicher and A. Ricca, Theo. Chem. Acc. (2013), 132, 1395.
"On the calculation of the vibrational frequencies of C_6H_4", C. W. Bauschlicher and A. Ricca, Chem. Phys. Lett. (2013), 556, 1.
"The infrared spectroscopy of compact polycyclic aromatic hydrocarbons containing up to 384 carbons", A. Ricca, C. W. Bauschlicher, C. Boersma, A. G. G. M. Tielens and L. J. Allamandola, ApJ (2012), 754, 75.
"Polycyclic aromatic hydrocarbon Far-infrared Spectroscopy", C. Boersma, C. W. Bauschlicher, A. Ricca, A. L. Mattioda, E. Peeters, A. G. G. M. Tielens, and L. J. Allamandola, ApJ (2011), 729, 64.
"The infrared spectroscopy of PAHs with 5,7-membered fused ring defects", A. Ricca, C. W. Bauschlicher and L. J. Allamandola, ApJ (2011), 729, 94.
"Protonated PAH revisited", A. Ricca, C. W. Bauschlicher and L. J. Allamandola, ApJ (2011), 727, 128.
"On the calculation of the vibrational frequencies of polycyclic aromatic hydrocarbons", C. W. Bauschlicher and A. Ricca, Mol. Phys. (2010), 108, 2647.
"The NASA Ames PAH IR spectroscopic database: the computed spectra", C. W. Bauschlicher, C. Boersma, A. Ricca, A. L. Mattioda, J. Cami, E. Peeters, F. Sanchez de Armas, G. Puerta Saborido, D. M. Hudgins, and L. J. Allamandola, ApJS (2010) 189, 341.
"The Far-Infrared Spectroscopy of Very Large Neutral PAHs", A. Ricca, C. W. Bauschlicher, A. L. Mattioda, and L. J. Allamandola, ApJ 709, 42 (2010).
"The 15 – 20 μm PAH emission features: probes of individual PAHs? ", C. Boersma, C. W. Bauschlicher, L. J. Allamandola, A. Ricca, E. Peeters, and A. G. G. M. Tielens, A&A, 511, A32 (2010).
"The far-infrared emission from the Mg^+-PAH species", C. W. Bauschlicher and A. Ricca, ApJ 698, 275-280 (2009).
"Far-infrared spectroscopy of neutral coronene, ovalene, and dicoronylene", A. L. Mattioda, A. Ricca, J. Tucker and C. W. Bauschlicher, L. J. Allamandola, Astronom. J. 137, 4054 (2009).
"Formation of complex organics from acetylene catalyzed by ionized benezene", P. O. Momoh, A. Soliman, M. S. El-Shall, A. Ricca, J. Am. Chem. Soc. 130, 12848 (2008).

"The gas-phase catalytic formation of H_2 by cations" A, Ricca and C. W. Bauschlicher, Chem. Phys. Lett. 463, 327 (2008).
"Electronic and Vibrational Spectroscopy of Diamondoids and the Interstellar Infrared bands between 3.35 and 3.55 microns", C. W. Bauschlicher, Y. Liu, A. Ricca, A. L. Mattioda and L. J. Allamandola, ApJ 671, 458 (2007).
"The energetics for hydrogen addition to naphthalene cations", A. Ricca, E. L. O. Bakes and C. W. Bauschlicher, ApJ 659, 858 (2007).
"Mechanisms for the growth of polycyclic aromatic hydrocarbon (PAH) cations", C. W. Bauschlicher, A. Ricca, and M. Rosi, Chem. Phys. Lett. 355,159 (2002).
"Mechanisms for the incorporation of a nitrogen atom into polycyclic aromatic hydrocarbon cations", A. Ricca, C. W. Bauschlicher, and M. Rosi, Chem. Phys. Lett. 347, 473 (2001).
"On the reaction $CH_2O + NH_3 \rightarrow CH_2NH + H_2O$", S. P. Walch, C. W. Bauschlicher, A. Ricca, and E. L. O. Bakes, Chem. Phys. Lett. 333, 6 (2001).
"Mechanisms for the incorporation of a nitrogen atom into polycyclic aromatic hydrocarbons", A. Ricca, C. W. Bauschlicher, and E. L. O. Bakes, Icarus 154, 516 (2001).
"The reactions of polycyclic aromatic hydrocarbons with OH", A. Ricca and C. W. Bauschlicher, Chem. Phys. Lett. 328, 396 (2000).
"Mechanisms for polycyclic aromatic hydrocarbon (PAH) growth", C. W. Bauschlicher and A. Ricca, Chem. Phys. Lett. 326, 283 (2000).

Synergistic Activities

- 2006-2008: Mentor for the Summer Research for Undergraduates Program in Astrobiology at the SETI Institute.
- 2005: Reviewer for the National Science Foundation
- 2001-2008: Mentor for summer students from the University of Notre Dame, UC Berkeley.
- Referee for the Journal of Physical Chemistry, Chemical Physics, Chemical Physics Letters, The Astrophysical Journal.
- Invited review articles: "Chemistry by density functional theory", C. W. Bauschlicher, A. Ricca, H. Partridge, and S. R. Langhoff "Recent Advances in Density Functional Methods, Part II", Ed. D. P. Chong, p. 165 (World Scientific Publishing Company, Singapore 1997); "Computational Nanotechnology: the current flow through molecules" C. W. Bauschlicher and A. Ricca, p. 813 in "Theory and Applications of Computational Chemistry: The First 40 Years" eds. C. E. Dykstra, G. Frenking, K. S. Kim, and G. Scuseria, Elsevier (2005).

Collaborators and Other Affiliations

Louis Allamandola, Andrew Mattioda, Scott Sandford, NASA Ames
Joseph Roser, Amanda Cook, Jean Chiar, SETI Institute
Christiaan Boersma, San Jose State University Univ. Res. Foundation
Alexander Tielens, Harold Linnartz, Leiden University, The Netherlands
Els Peeters, Jan Cami, University of Western Ontario, Canada
Marzio Rosi, University of Perugia, Italy