John Anthony Paquette

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Scientist

Max Planck Institute for Solar System Research March 2014 to present

Analyzing cometary dust composition data from the COSIMA experiment onboard the Rosetta spacecraft

Consultant

Goddard Space Flight Center

January 2014 to February 2014

Modeling grain nucleation in circumstellar outflow around AGB stars and in the proto-solar nebula after lightning.

Senior Fellow, NASA Postdoctoral Program

Goddard Space Flight Center

September 2010 to September 2013

Modeling silicate grain nucleation in circumstellar outflow around AGB stars and in the proto-solar nebula after lightning.

Consultant

Goddard Space Flight Center

November 2009 to September 2010

Modeling grain nucleation in circumstellar outflow around AGB stars.

Research Associate

University of Maryland

December 1993 to October 2009

- Developed algorithms to derive absolute abundances of heavy elements in the solar wind for SOHO mission from CELIAS/MTOF (Mass Time of Flight) data
- Measured Chromium to Iron ratio in the solar wind using SOHO/CELIAS/MTOF data, including calculation of statistical and systematic uncertainties
- Measurement of elemental & isotopic ratios in SOHO/CELIAS/MTOF data, including calculation of statistical and systematic
 uncertainties
- Development of algorithms to derive solar wind parameter data from the Proton Monitor on SOHO to provide automatic near-real-time public access to parameter plots and listings via WWW (at http://umtof.umd.edu/pm)
- Creation & maintenance of several web pages in which data is extracted from satellite telemetry & automatically displayed as plots on the Web
- Development of algorithms to allow the derivation of speeds, density ratios & densities of solar wind heavy elements from ACE/SWICS (Advanced Composition Explorer / Solar Wind Ion Composition Spectrometer) data
- Created a number of programs designed to facilitate data analysis and spacecraft monitoring for the CELIAS and SWICS experiments
- Participated in the Virtual Heliospheric Observatory project
- Participated in instrument calibration of the MTOF sensor at accelerator facilities at the University of Bern, Switzerland

Faculty Research Assistant

University of Maryland

June 1992 to December 1993

- Modified and helped to automate Fortran data reduction software for the EECA (Electrostatic Energy-Charge Analyzer) experiment on the IMP 8 satellite
- Modified Fortran data reduction software for the ULECA (Ultra Low Energy Charge Analyzer) experiment on the ISEE 1 and ISEE 3 satellites
- Collaborated in the development of programs that aided in instrument status monitoring and data reduction from the SWICS, MASS (High MASS Resolution Spectrometer), and STICS (SupraThermal Ion Composition Spectrometer) sensors on the Wind spacecraft

EDUCATION:

University of Maryland, PhD in Physics, 1992 University of Maryland MS in Physics, 1987 Rensselaer Polytechnic Institute, BS in Physics, 1982

LABORATORY EXPERIENCE:

Operated the Mirror Instability Experiment (MIX). Constructed a microwave interferometer to measure plasma density in MIX. Participated in calibration of the SOHO/CELIAS/MTOF sensor.

AWARDS:

ESA award for outstanding contribution to the SOHO recovery July 12 1999 NASA Group Achievement Award June 16 1998 Wind SMS Team

SELECTED PUBLICATIONS:

Comet 67P/Churyumov-Gerasimenako Sheds Dust Coat Accumulated Over the Past Four Years, Schulz, R., M. Hilchenbach, Y. Langevin, J. Kissel, J. Silen, C. Briois, C. Engrand, K. Hornung, D. Baklouti, A. Bardyn, H. Cottin, H. Fischer, N. Fray, M. Godard, H. Lehto, L. Le Roy, S. Merouane, F.-R. Orthous-Daunay, J. Paquette, J. Rynö, S. Siljeström, O. Stenzel, L. Thirkell, K. Varmuza and B. Zaprudin, *Nature*, **518**, 216-218, 2015.

Can Lightning Produce Significant Levels of Mass-Independent Oxygen Isotopic Fractionation in Nebular Dust?, Nuth, J.A. and J.A. Paquette, *Meteoritics and Planetary Science* **47**, 2056-2069, 2012.

The Lack of Chemical Equilibrium Does Not Preclude the Use of Classical Nucleation Theory in Circumstellar Outflows, Paquette, J.A. and J.A. Nuth, *The Astrophysical Journal, Letters* **737**, L6, 2011.

A Model of Silicate Grain Nucleation and Growth in Circumstellar Outflows, Paquette, J.A., F. Ferguson, and J.A. Nuth, *The Astrophysical Journal* **732**, 62. 2011.

The Sulfur Abundance in the Slow Solar Wind, Giammanco, C., Wurz, P., Opitz, A., Ipavich, M.R and J.A. Paquette, *The Astrophysical Journal* **134**, 2451-2454, 2007.

Determination of the Sulfur Abundance in the Solar Wind, C. Giammanco, Bochsler, P., Karrer, R., Ipavich, M.R and J.A. Paquette, *Space Science Reviews* **130**, 329-333, 2007.

Isotopic composition and Nickel/Iron Ratio in the Solar Wind: Results from SOHO/CELIAS/MTOF, R. Karrer, Bochsler, P., Giammanco, C., Ipavich, M.R and J.A. Paquette, *Space Science Reviews*. 130, 317-321, 2007.

Nickel Isotopic Composition and Nickel/Iron Ratio in the Solar Wind: Results from SOHO/CELIAS/MTOF, R. Karrer, P. Bochsler, C. Giammanco, F. Ipavich, J. Paquette, and P. Wurz, Proceedings of the Symposium on the Composition of Matter, Grindelwald, Switzerland, Sept. 11-15, 2006.

Observations of Solar Wind Ni and Fe, F. Ipavich, P. Bochsler, J. Paquette, S. Lasley, Proc. SOHO 17 – 10 Years of SOHO and Beyond, Giardini Naxos, Sicily, Italy (ESA SP-617, July 2006)

Effect of Coronal Mass Ejection Interactions on the SOHO/CELIAS/MTOF Measurements, X. Wang, P. Wurz, P. Bochsler, F.M. Ipavich, J. A. Paquette, and R.F. Wimmer-Schweingruber, Coronal and Stellar Mass Ejections. IAU Symposium Proceedings of the International Astronomical Union 226, 13-17 September 2004 Bejing (K. Dere, J. Wang, and Y. Yan eds). Cambridge University Press 409-413 (2005)

Composition of Magnetic Cloud Plasmas During 1997 and 1998, P. Wurz, R. F. Wimmer-Schweingrubeer, P. Bochsler, A.B. Galvin, J.A.Paquette, F.M. Ipavich, and G. Gloeckler, Proc. 10th Int. Solar Wind Conf., 2003.

Calcium Abundance in the Solar Wind, P. Wurz, P. Bochsler, J. A. Paquette, and F.M. Ipavich, *The Astrophysical Journal.* **583**, 489-495, 2003.

The Relative Abundance of Chromium and Iron in the Solar Wind, J.A. Paquette, F.M. Ipavich, S.E. Lasley, P. Bochsler, and P. Wurz, American Institute Physics on Solar and Galactic Composition, CP-598 (2001), 95-100.

Solar Wind Iron Isotopic Abundances: Results from SOHO/CELIAS/MTOF, F.M. Ipavich, J.A. Paquette, P. Bochsler, S.E. Lasley, and P. Wurz, American Institute Physics on Solar and Galactic Composition, CP-598 (2001), 121-126.

Determination of the Ar/Ca Solar Wind Elemental Abundance Ratio Using SOHO/CELIAS/MTOF, J.M. Weygand, F.M. Ipavich, P. Wurz, J.A. Paquette, and P. Bochsler, American Institute Physics on Solar and Galactic Composition, CP-598 (2001) 101-106.