DR. SIEGFRIED JANSON

SENIOR SCIENTIST, SMALL SATELLITE DEPARTMENT

Dr. Siegfried Janson is a senior scientist in the Small Satellite Department at The Aerospace Corporation. He joined Aerospace in 1987 to pursue experimental research in advanced electric thrusters for spacecraft. By 1995, he had published more than 20 papers on electric thruster research, including microthrusters for new classes of satellites to be called nanosatellites and picosatellites. He started the field of active sub-kilogram mass spacecraft in 1989, and has published more than 50 papers on small satellite propulsion requirements, basic design issues, MicroElectroMechanical Systems (MEMS) for space applications, all-silicon satellites, and small satellite orbital architectures. His pioneering work on small satellites paved the way for today's CubeSats. Janson has flown experiments on a sounding rocket, the U.S. space shuttle, the International Space Station, and several small satellites. He played a key role in the design and development of the MEMS Testbed, PicoSatellite Solar Cell Testbeds (PSSCTs) 1 and 2, AeroCube-3, the AeroCube-4 series, and the AeroCube-7 series. Janson's current research interests are nano/pico/femtosatellites; active membrane spacecraft; spacecraft optical communications; microthrusters; formation flying; MEMS; and distributed space systems. He was featured on the cover of Aviation Week holding AeroCube-3.

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Education

Siegfried obtained a bachelor's degree in aeronautical engineering from Rensselaer Polytechnic Institute, and a Master of Engineering and Ph.D. degrees in aerospace engineering from Cornell University. He was a post-doctoral associate at Cornell from 1984 to 1987, where he developed an electron beam ion source for atomic physics experiments.

Affiliations

Janson chaired the SPIE "MEMS Components and Applications" conference in 2001, 2003, and 2004, and is co-editor of the book, *Small Satellites: Past, Present and Future*. He served on the National Research Council (NRC) Committee on Implications of Emerging Micro and Nano Technologies, and on the NRC Committee on Nanotechnology for the Intelligence Community. He is currently the principal investigator on the NASA-sponsored Optical Communications and Sensor Demonstration CubeSat program, and the NASA Innovative Advanced Concepts (NIAC) Phase II program, "Brane Craft." A Brane Craft, short for "Membrane Spacecraft," is an ultra-thin, ultra-light spacecraft that can make cleanup of orbital debris in the 0.1 to 10-kg mass range, as well as exploration of thousands of asteroids, economically feasible. He is a NASA NIAC fellow, a member of the IEEE, and currently holds 16 U.S. patents in orbital mechanics, spacecraft attitude sensors, glass/ceramic systems, thermoelectric coolers, and MEMS fabrication.