

Adam P. Bruckner
Professor and Chair, Department of Aeronautics and Astronautics
University of Washington, Seattle, WA

Education

Ph.D.: Princeton University, 1972
M.A.: Princeton University, 1968
B.Engr.: McGill University, 1966

Positions Held

Department Chair: July 1998-present
Professor: Sept. 1991-present
Research Professor: July 1988 - Sept. 1991
Research Associate Professor: July 1978 – July 1988
Research Assistant Professor: July 1975 – July 1978
Research Associate: June 1972 – July 1975

Research Interests

Space systems, Mars *in situ* resource utilization, hypervelocity accelerators (ram accelerator), space propulsion and power

Selected Publications

Lee, J., Eberhardt, D.S., and **Bruckner, A.P.**, “From Biplanes to Spaceplanes: The History of the University of Washington Department of Aeronautics and Astronautics,” submitted to ASEE Annual Conference and Exposition, Austin, TX, June 14-17.

Knowlen, C., Higgins, A.J., Harris, P., and **Bruckner, A.P.**, “Hypersonic Shock-Induced Combustion Propulsion,” Paper AIAA-2009-0715, 47th Aerospace Sciences Meeting and Exhibit, Orlando, FL, Jan. 5-8, 2009. (To be submitted to *J. Propulsion and Power*.)

Bengherbia, T., Yao, Y., Bauer, P., Knowlen, C. and **Bruckner, A.P.**, “Numerical Analysis of the Thermally Choked Ram Accelerator in Sub-detonative Regime,” 21st ICDERS, Poitiers, France, July 23-27, 2007.

Knowlen, C., Joseph, B. and **Bruckner, A.P.**, “Ram Accelerator as an Impulsive Space Launcher: Assessment of Technical Risks,” International Space Development Conference, Dallas, TX, May 25-28, 2007.

Mastrangelo, C., Borgford-Parnell, J., Renton, J., Zervas-Berg, S., **Bruckner, A.P.**, Klastorin, T., Rice, E., and Storch, R. “An Educational Concept to Compete in the Global Business Environment,” Paper AIAA 2007-2230, 48th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conf., Honolulu, HI, April 23-26, 2007.

Wood, S. E., Schneider, M. A., Cardell, G., Hecht, M., Knowlen, C., **Bruckner, A. P.**, Catling, D. C., Cobos, D., and Zent, A., “Characterization and Calibration of the Phoenix TECP Relative Humidity Sensor in a Mars Atmospheric Simulation Chamber,” 4th International Conference on Mars Polar Science and Exploration, Davos, Switzerland, Oct. 2-6, 2006.

Bauer, P., Knowlen, C., and **Bruckner, A.P.**, “Modeling Acceleration Effects on Ram Accelerator Thrust at High Pressure,” *J. Propulsion and Power*, **21**: 955-957, 2005.

Bundy, C., Knowlen, C., and **Bruckner, A.P.**, “Unsteady Effects on Ram Accelerator Operation at Elevated Fill Pressures,” *J. Propulsion and Power* **20**: 801-810, 2004.

Schneider, M.A., and **Bruckner, A.P.**, “Extraction of Water from the Martian Atmosphere,” *Space Technology & Applications International Forum – STAIF-2003*, Albuquerque, NM, Feb. 2-5, 2003, M.S. El-Genk, ed., American Institute of Physics Conference Proceedings Volume 654, pp. 1124-1132.

Polkko, J., Harri, A-M., Lehto, A., Tillman, J., **Bruckner, A.P.**, and Siili T. “Digihum: Humidity Transmitter for Harsh Martian Environment, Construction and Performance Assessment,” Poster PS037, XXVII General Assembly of the European Geophysical Society, Nice, France, April 21-26, 2002.

Bruckner, A.P., “The Ram Accelerator: A Technology Overview” Paper AIAA 2002-1014, 40th Aerospace Sciences Meeting and Exhibit, Reno, NV, Jan. 14-17, 2002. (Inv.)

Knowlen, C., and **Bruckner, A.P.**, “Direct Space Launch Using Ram Accelerator Technology,” in *Space Technology and Applications Forum–2001*, El-Genk, M.S., ed., pp. 583-588, Am. Inst. Phys., Feb. 2001.

Grover, M.R., Odell, E.H., Smith-Brito, S.L., Warwick, R.W., and **Bruckner, A.P.**, “Ares Explore: A Study of Human Mars Exploration Alternatives Using *In Situ* Propellant Production and Current Technology,” AAS 96-332, in *The Case for Mars VI, Vol. 98, Making Mars an Affordable Destination*, McMillen, K.R., ed., AAS Science and Technology Series, Univelt, Inc., San Diego, CA, 2000, pp. 309-340 (Invited).

Schultz, E., Knowlen, C., and **Bruckner, A.P.**, “Starting Envelope of the Ram Accelerator,” *J. Prop. and Power*, **16**:1040-1052, 2000.

Campbell, M.E., **Bruckner, A.P.**, *et al.*, “UW Dawgstar: One Third of ION-F – an Element of the Ionospheric Observation Nanosatellite Formation,” Paper SSC9-III-4, 13th AIAA/USU Conference on Small Satellites, Logan, UT, August 1999.

Patents

US Patent Nos. 4,727,930 (1988); 4,938,112 (1990); 4,982,647 (1991); 5,097,743 (1992); 5,927,653 (1999)

Grants & Contracts

PI or co-PI since 1975 on numerous grants and contracts from NASA, USAF, ARO, AFOSR, ONR, NSF, USRA, Boeing, etc. Total research funding to date: ~\$9,000,000.

Honors and Awards

Fellow, American Institute of Aeronautics and Astronautics (AIAA), 1997
Certificate of Appreciation, Universities Space Research Association (USRA), 1994
Professor of the Year, AA Dept. (Co-recipient) 1994
AIAA Certificate of Recognition, 1992; Certificate Appreciation, 1991
AIAA Associate Fellow, 1989
Burlington Resources, Inc. Faculty Achievement Award for Outstanding Research, 1989
USRA Distinguished Service Award, 1989
NASA Certificate of Appreciation, 1985, 1986, 1989, 1992
NASA Certificate of Recognition, 1983
AIAA Pacific Northwest Section Award for Outstanding Contribution to Aerospace Engineering, 1973
British Association Medal, McGill University, 1966

Professional Memberships

American Institute of Aeronautics and Astronautics (Fellow)
American Society of Engineering Educators
Sigma Xi

Selected Professional Service

AIAA Space Resources Technical Committee, 2007-present
Co-Director (founding), Global Integrated Systems Engineering (GISE) Program, University of Washington, 2006-2007
NASA/USRA RASC-AL Program Steering Committee, 2003-2008
Session Co-Chair, “Space Resource Utilization on Mars,” Space Technology and Applications International Forum (STAIF), 2004 -2007
AIAA Space Colonization Technical Committee, 2003-present
Member, Local Organizing Committee, 18th International Colloquium on Dynamics of Explosions and Reactive Systems (ICDERS), Seattle, WA, July 29-August 3, 2001
AIAA Pacific Northwest Section Council Member, 1998-2000
Session Chair, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, 1992-2000

Selected Consulting

USRA Space Technology Science Council, 1999-2005
Kistler Aerospace Corporation, Kirkland, WA, 1994-1999
Adroit Systems, Inc., Bellevue, WA, 1998-99
U.S. Army Research Laboratory, Aberdeen, MD, 1990-96.