

Arthur T. Mattick
Associate Professor, Department of Aeronautics and Astronautics
University of Washington, Seattle, WA

Education	Ph.D.: Physics, M.I.T. 1975 M.S.: Physics, M.I.T. 1971 B.S.: Physics, M.I.T. 1971
Positions Held	Associate Professor, WOT: July 1991-present Research Associate Professor: July 1982 – July 1991 Research Assistant Professor: Dec 1978 – July 1982 Research Associate: Oct 1975 – July 1982
Research Interests	Space systems, space propulsion and power, energy conversion, reacting gas flows, laser systems, fluid and plasma diagnostics
Honors and Awards	AIAA Pacific Northwest Section Award for Outstanding Contribution to Aerospace Engineering, 1980 Invited Lecturer – Chinese Academy of Sciences, 1987
Selected Publications	Kim, H., Cellamare, V., Jarboe, T.R., and Mattick, A.T. , "Refractory clad transient internal probe for magnetic field measurements in high temperature plasmas," <i>Rev. Sci. Instruments</i> 76 (2005). Rayburn, C.D., Campbell, M.E. and Mattick, A.T. , "Pulsed Plasma Thruster for Microsatellites", <i>J. Spacecraft and Rockets</i> 42 (2005) Knowlen, C. and Mattick, A.T. , "Critical Orifice Diameter Measurements for NH ₃ -N ₂ O at Elevated Pressure," 20 th International Colloquium on the Dynamics of Explosions and Reactive Systems, Montreal, July 31- Aug 5, 2005. Jones, J.R. and Mattick, A.T. , "Micronozzle Flow Analysis of a High-Temperature Chemical Propulsion System," Paper AIAA 2003-6270, Space 2003 Conference, 23-25 Sept 2003, Long Beach, CA Holcomb, C.T., Jarboe, T.R., Hill, D.N., Mclean, H.S., Wood, R.D., Cellamare, V., Mattick, A.T. , Bulmer, R.H., and Hooper, E.B., "Nonperturbing field profile measurement of a sustained spheromak", <i>Rev. Sci. Instruments</i> 72 (2001) Masse, R.K., Russell, D.A., Mattick, A.T. and Knowlen, C., "Study of shock recompression parameter dependence," Paper 1070, 22 nd International Symposium on Shock Waves, London, UK, July 18-23, 1999. Jarboe, T.R., Bohnet, M.A., Nelson, B.A., Mattick, A.T. , and Orvis, D.J., "Results from current drive experiments on the helicity injected torus," <i>Physics of Plasmas</i> 5 , 1807 (1998). Knowlen, C., Bruckner, A.P., Mattick, A.T. and Hertzberg, A., "High efficiency energy conversion systems for liquid nitrogen automobiles," SAE Paper 981898, 1998 SAE Future Transportation Technology Conference, Costa Mesa, CA, August 11-13, 1998. Williams, J., Knowlen, C., Mattick, A.T. and Hertzberg, A., "Frost-free Cryogenic Heat Exchangers for Automotive Propulsion," Paper AIAA 97-3168, 33 rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Seattle, WA, July 6-9, 1997. Mattick, A.T. , Knowlen, C., Russell, D.A. and Hertzberg, A., "Pyrolysis of hydrocarbons using a shock wave reactor," Paper 3800, 21 st International Symposium on Shock Waves, Great Keppel Island, Australia, July 20-25, 1997. Galambos, J.P., Bohnet, M.A., Mattick, A.T. and Jarboe, T.R., "Internal toroidal field measurements on the Helicity Injected Tokamak using the Transient Internal Probe," <i>Rev. Sci. Instrum.</i> 68 , Jan. 1997. Galambos, J.P., Bohnet, M.A., Mattick, A.T. and Jarboe, T.R., "Magnetic Field Measurements Using the Transient Internal Probe (TIP)," <i>Rev. Sci. Inst.</i> 67 , 469 (1996).

Russell, D.A., **Mattick, A.T.**, Knowlen, C. and Masse, R.K., "Petrochemical pyrolysis with shock waves," (with C. Knowlen, D.A. Russell, and R.K. Masse), AIAA Paper 95-0402, 33rd AIAA Aerospace Sciences Meeting, Reno, NV, Jan. 9-12, 1995.

Mattick, A.T., Knowlen, C., Russell, D.A. and Masse, R.K., "Petrochemical pyrolysis with shock waves," AIAA Paper 95-0402, 33rd AIAA Aerospace Sciences Meeting, Reno, NV, Jan. 9-12, 1995.

Bohnet, M.A., Galambos, J.P., **Mattick, A.T.** and Jarboe, T.R., "The Transient Internal Probe: A Novel Method for Measuring Internal Magnetic Field Profiles," *Rev. Sci. Inst.* **66**, 1197 (1995).

Mattick, A.T., Russell, D.A., Hertzberg, A. and C. Knowlen, "Shock-controlled chemical processing," *Shock Waves, Proceedings of the 19th International Symposium on Shock Waves, Marseille, July 1993*", R. Brun and L.Z. Dumitrescu (Eds.), Springer-Verlag, Berlin, 1995), pp. 209-214.

Mattick, A.T., Hertzberg, A. and Russell, D.A., "Shock Controlled Reactors," in *Shock Waves, Proceedings of the 18th ISSW Symposium*, (Springer Verlag, Berlin, 1992).

McFall, K.A. and **Mattick, A.T.**, "Two Dimensional Analysis of a High Temperature Gaseous Radiation Receiver," AIAA 92-3215, AIAA 28th Joint Propulsion Conference, Nashville, TN, July 6-8 (1992).

McFall, K.A. and **Mattick, A.T.**, "Efficient Space Propulsion and Power Using a High-Temperature, Gaseous Radiation Receiver," AIAA 90-1615, AIAA 21st Fluid Dynamics, Plasma Dynamics and Lasers Conference, Seattle, WA, June 18-20 (1990).

Mattick, A.T. and Hertzberg, A., "Liquid Droplet Radiator Performance Studies" *Acta Astron.* **12**:591 (1985).

Patents	US Patent Nos. 5,219,530 (1993); 5,300,216 (1993)
Grants & Contracts	PI or co-PI since 1980 on numerous grants and contracts from NASA, USAF, DOE, LLNL, DARPA, ONR. Total research funding exceeds \$4M.
Professional Memberships	American Institute of Aeronautics and Astronautics (1978-2000) American Physical Society (1975-2000) Sigma Xi
Selected Professional Service	AIAA Fluids and Plasmas Technical Committee, 1988-1992 NASA/USRA Proposal Evaluation Board (1990) Session Co-Chair, AIAA Aerospace Sciences Meeting, Reno, 1990.
Selected Consulting	Pratt & Whitney, 1995-2005 Cornell University, 2002-2004 Powder Graphics, Inc., 1994 Conradus Associates, 1992 Dayton Research Institute, 1986-1988