

**Casey C. Farnell** President, Plasma Controls, LLC

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## Education:

- Colorado State University, Department of Mechanical Engineering: Ph.D., 2007; B.S., 2001.

## Professional Experience:

2012 – Present. **Research Scientist II - Center for Electric Propulsion & Plasma Engineering (CEPPE), Colorado State University**, Department of Mechanical Engineering, 1374 Campus Delivery, Fort Collins, CO 80523-1374

2007 – Present. **President - Plasma Controls, LLC**. 1180 La Eda Lane, Fort Collins, CO 80526-4415

2008 – 2012. **Postdoctoral Researcher - Center for Electric Propulsion & Plasma Engineering (CEPPE), Colorado State University**

## Publications (recent &amp; related):

- **ORCID ID: <https://orcid.org/0000-0001-7792-8075>**
- Thompson, S.J., et al. "Combined electrostatic analyzer—Wien filter probe for characterization of species distributions in Hall thrusters" *J. Appl. Phys.* 130, 233302 (2021).
- Farnell, C.C., Farnell, C.C., Farnell, S.C., and Williams, J.D., "Recommended Practice for Use of Electrostatic Analyzers in Electric Propulsion Testing," *Journal of Propulsion and Power*, <http://dx.doi.org/10.2514/1.B35413>, November 2, 2016.
- Farnell, Casey C., Williams, J.D., and Farnell, Cody C., "Comparison of Hollow Cathode Discharge Plasma Configurations," *Plasma Sources Sci. and Tech.*, V. 20, No. 2, Article #- 025006, 2011.
- Farnell, C.C., Brown, D.L., Willis, G.M., Branam, R.D., and Williams, J.D. "Remote Diagnostic Measurements of Hall Thruster Plumes." *IEPC-2009-031, 31st International Electric Propulsion Conference*. University of Michigan, Ann Arbor, Michigan, September 2009.
- Rubin, B., Farnell, C., Williams, J., Vaughn, J., Schneider, T., and Ferguson, D., "Magnetic filter type plasma source for ground-based simulation of low earth orbit environment," *Plasma Sources Science and Technology*, vol.18, 025015, 2009.
- Farnell, C.C. and Williams, J.D., "Direct and Remote Measurements of a Hollow Cathode Discharge," 2007 IEEE Pulsed Power and Plasma Science Conference, Albuquerque, NM, June 17-22, 2007.
- Williams, J.D., Farnell, C.C., and Shoemaker, P.B., "Ground-Based Simulation of Low Earth Orbit Plasma Conditions: Plasma Generation and Characterization," 8th Spacecraft Charging Technology Conference, Huntsville, AL, October 20-23, 2003.

Dr. Farnell is a research scientist at Colorado State University's Center for Electric Propulsion and Plasma Engineering (CEPPE), and a researcher and President of Plasma Controls, LLC. Dr. Farnell's graduate and post-graduate research at CEPPE focused on using diagnostics to investigate the plasmas produced near hollow cathodes and other plasma sources. Casey is well versed in low temperature plasma diagnostics, hollow cathode operation, vacuum systems, experimental setup, and data acquisition. During his research Casey has used, designed, and constructed electrostatic energy analyzers (ESAs), ExB charge state analyzers, Faraday-style current density probes, emissive probes, and Langmuir probes. A portion of his research has been involved with argon and atomic oxygen ion sources designed to simulate the low earth orbit plasma environment. Current research is focused on heater and heater-less hollow cathode design. At Plasma Controls, Casey sells and researches tantalum, BaO-W based cathodes that are sold to the space and commercial markets in heater and heater-less instant-start cathode versions.