



Matthew Goeckner

Associate Professor, Electrical Engineering

E-Mail Address:
goeckner@utdallas.edu

Website URL:
www.utdallas.edu/~goeckner

Research Interests

- Plasma Science
- Plasma Chemistry
- Material Processing
- Chemical Sensors
- Material Diagnostics

Education

- Ph.D., Physics, University of Iowa (1990)
- M.S., Physics, University of California, Los Angeles (UCLA) (1984)
- B.S., Physics, Southern Illinois University (1983)
- B.S., Mathematics, Southern Illinois University (1982)

Professional Highlights

Dr. Goeckner is an Associate Professor in the Department of Electrical Engineering and directs UTD's Plasma Science Laboratory. The Plasma Science Laboratory is dedicated to the development of the science of industrially relevant plasmas and related tools. This lab, along with the Plasma Applications Laboratory run by Dr. Overzet, make up the electrical engineering department's plasma engineering core. Additionally, UTD has continued its strong presence in Space Plasmas (Professor Heelis and Professor Earle) as well as plasmas for photonic applications (Professor Cunningham). Dr. Goeckner has worked as a Research Physicist at the Princeton Plasma Physics Laboratory, a Research Engineer at Varian (now Varian Medical Systems) Central Research, and a Research Engineer at Varian Semiconductor Equipment Central Research. He is a member of the American Vacuum Society (AVS) Plasma Sciences and Technology Division and a Senior Member of IEEE, Nuclear and Plasma Sciences Division. Dr. Goeckner has performed research on a wide variety of plasma systems and related diagnostics. His Ph.D. research was on magnetron sputtering systems using an advanced optical diagnostic. Since then, he has worked with CVD of polymer materials, Laser CVD/CVD of metals, etching of a variety of thin films, implant of dopants and related diagnostics.

Examples of Dr. Goeckner's recently published work include:

- **Plasma Doping for Shallow Junctions**, with S.B. Felch, Z. Fang, A. Oberhofer, V.K.F. Chia, G.R. Mount, M. Poulakos and W.A. Keenan, from the *Journal of Vacuum Science and Technology B* 17, 1999
- **Profiling of Ultra-Shallow Junctions**, with S.B. Felch, Z. Fang, A. Oberhofer, V.K.F. Chia, G.R. Mount, M. Poulakos and W.A. Keenan, from the *Journal of Vacuum Science and Technology B* 18, 2000
- **Nitrogen Atom Energy Distributions in a Hollow-Cathode Planar Sputtering Magnetron**, with Zhehui Wang, Samuel A. Cohen, and David N. Ruzic, from *Physical Review E* 61, 2000
- **The Effects on Plasma Properties of a Current Node on Inductively Coupled Plasma Sources**, with S. Srinivasan, J. Marquis, L. Pratti, M.H. Khater, and L.J. Overzet, from *Plasma Sources Science and Technology* 12, 2003
- **A Modified Gaseous Electronics Conference Reference Cell for the Study of Plasma-Surface-Gas Interactions**, with J.M. Marquis, B.J. Markham, A.K. Jindal, E.A. Joseph, B.S. Zhou, from the *Review of Scientific Instrumentation* 75, 2004
- **Investigation and Modeling of Plasma-Wall Interactions in Inductively Coupled Fluorocarbon Plasmas**, with E. A. Joseph, B. Zhou, S. P. Sant, and L. J. Overzet, from the *Journal of Vacuum Science and Technology A* 22, 2004
- **FTIR Characterization of a Pulsed Butadiene Plasma**, with A.K. Jindal and L. J. Overzet, from the *Journal of Vacuum Science and Technology A* 23, 2005