



Announcing a Special Issue of the IEEE Transactions on Plasma Science
Ion sources and their applications
(Scheduled for March, 2013)

Plasma and ion beam technologies now play an important and indispensable role in the various industrial fields, particularly semiconductor industry and hard coating. This industrial success is brought by the superior characteristics of plasma and ion beam such as good controllability using electro-magnetic field, wide usable energy ranges, and non thermal-equilibrium processes. In recent trend, novel plasma and ion technologies, which moreover realize their potential, are burgeoning such as the high power impulse magnetron sputtering, the ion beam lithography, and single ion implantation. These technologies have attracted significant interest and demonstrates successful results about the improvement of film properties including adhesion, hardness, smoothness, oxidation resistance, corrosion resistance, mechanical properties, optical refractive index, electrical conductivity, crystallinity.

This rapidly evolving field is a point of focus in many international conferences such as Ion Beam Modification of Materials (IBMM), Surface Modification by Ion Beams (SMMIB), Materials Research Society meetings (MRS), Plasma Surface Engineering (PSE), and particularly the biennial Plasma-Based Ion Implantation and Deposition (PBII&D) workshop, and IEEE International Conference on Plasma Science (ICOPS) has seen an increasing number of papers in this area as well. Therefore, we invite members of IEEE and other scientists and engineers working in this field to submit manuscripts to this Special Issue dedicated to plasma-based surface modification and treatment technologies.

The target of this special issue is to present the cutting edge of this evolving plasma and ion beam technologies, and the exciting results showing here must promote the development. Contributions of original articles are requested on the following topics:

- Physics and modeling of plasma – surface interactions
- Fundamental ion-solid interactions and simulations.
- Radiation damage of materials
- Plasma and ion beam instrumentation such as plasma sources, power modulators, plasma diagnostics and ion beam transportation.
- Sputtering and reactive ion etching phenomena
- Coating technologies using high-power impulse magnetron sputtering
- Novel pulsed glow discharge plasma technologies.
- Equipment for semiconductor-device production.
- Plasma assisted chemical vapor depositions
- Plasma immersion ion implantation
- Ion beam lithography
- Focused Ion beam technology
- Single ion and swift ion beam technology and applications
- Surface treatment using cluster ion beams
- Surface analysis using ion beams
- Medical, biological, metallurgical, aerospace, environmental and energy technology applications
- Fabrication of novel microelectronic and photonic structures and devices
- Plasma and ion beam surface treatment of industrial components
- Characterization of ion beam and plasma-treated surfaces

All contributions should reach the Guest Editors **no later than July 1, 2012** at the IEEE Transactions on Plasma Science IEEE Manuscript Central website at <http://mc.manuscriptcentral.com/tps-ieee>. Questions regarding the Special Issue on **Ion sources and their applications** can be addressed to the Guest Editors:

Dr. Ken Yukimura
Silicon Nanoscale Device Group
Nanoelectronics Research Institute
National Institute of Advanced Industrial Science and Technology (AIST)
Tsukuba Central 2, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568
Tel: [81]-77-582-2426
E-mail: ken-yukimura@aist.go.jp

Dr. Hisato Ogiso
Advanced Manufacturing Research Institute,
National Institute of Advanced Industrial Science and
Technology (AIST),
1-2-1 Namiki, Tsukuba, Ibaraki 305-8564, Japan
Tel: [81]-298-61-5115
E-mail: ogiso.h@aist.go.jp