Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Investigation of Plasma Interactions with Soft Materials via Combinatorial Plasma-Process Analyzer for Plasma Nano Processes YUICHI SETSUHARA, KEN CHO, KOSUKE TAKENAKA, Osaka University, MASAHARU SHIRATANI, Kyushu University, MAKOTO SEKINE, MASARU HORI, Nagoya University — Materials systems with inorganic/soft materials hybrid structures are of great importance for development of nano devices including next-generation ULSIs, NEMS and bio-chips; e.g., photoresist for EUV lithography, low-k materials and functional organic materials for flexible electronics. For successful development of these advanced device technologies, it is of great significance to establish scientific basis of understanding plasma interactions with soft materials in terms of chemical and physical properties, however, it is greatly anticipated that optimal process conditions can be attained at a pinpoint window due to requirement of nanometer-size precision. In order to effectively carry out systematic investigations of plasma nano processes, a plasma process analyzer has been developed via combinatorial methods, in which process examinations with a continuous variation of plasma-process conditions (ion flux, radical flux) can be carried out via a continuously graded distribution of process parameters. In this presentation, design issues and performance of the combinatorial plasma-process analyzer will be presented together with results obtained for plasma-polymer interactions in terms of chemical bonding states, surface morphologies and etching characteristics.

Yuichi Setsuhara
Joining and Welding Research Institute, Osaka University

Date submitted: 11 Jun 2010 Electronic form version 1.4