

C-03

**THE EFFECT OF THE HIGH DENSITY PLASMA ON THE
DIAMOND-LIKE CARBON FILMS**

H. Kim, D.H. Jung, B. Park, K. C. Yoo , J. J. Lee

School of Materials Science Engineering, Seoul National University, Seoul, Korea
q98dbj10@hanmail.net

J. H. Joo

Department of Materials Science and Engineering, Kunsan National University,
Mt. 68 Miryong-dong, Kunsan, Korea

DLC films were deposited on Si(100) substrates by inductively coupled plasma (ICP) assisted chemical vapor deposition (CVD). A mixture of acetylene (C_2H_2) and argon (Ar) gases was used as the precursor and plasma source, respectively.

The structure of the films was characterized by the Raman spectroscopy. Results from the Raman spectroscopy analysis indicated that the property change of the DLC films is due to the sp^3 and sp^2 ratio in the films under various conditions such as ICP power, working pressure and RF substrate bias. The hydrogen content in the DLC films was determined by an electron recoil detector (ERD). The roughness of the films was measured by atomic force microscope (AFM). A microhardness tester was used for the hardness and elastic modulus measurement. The DLC film showed a maximum hardness of 37GPa. In this work, the relationship between deposition parameters and mechanical properties were discussed.

Keywords: Diamond-like carbon; Inductively coupled plasma; CVD