

Abstract Submitted
for the GEC15 Meeting of
The American Physical Society

Diagnostics of capacitively-coupled hydrocarbon plasmas for deposition of diamond-like carbon films using quadrupole mass spectrometry and Langmuir probe¹ AKINORI ODA, Faculty of Engineering, Chiba Institute of Technology, SHUN FUKAI, Graduate School of Engineering, Chiba Institute of Technology, HIROYUKI KOUSAKA, Graduate School of Engineering, Nagoya University, TAKAYUKI OHTA, Faculty of Engineering, Meijo University — Diamond-like carbon (DLC) films are the hydrogenated amorphous carbon films, which contains a mixture of sp²- and sp³-bonded carbon. The DLC films have been widely used for various applications, such as automotive, semiconductors, medical devices, since have excellent material properties in lower friction, higher chemical stability, higher hardness, higher wear resistance. Until now, numerous investigations on the DLC films using plasma assisted chemical vapor deposition have been done. For precise control of coating technique of DLC films, it is enormously important to clarify the fundamental properties in hydrocarbon plasmas, as a source of hydrocarbon ions and radicals. In this paper, the fundamental properties in a low pressure radio-frequency hydrocarbon (Ar/CH₄(1 %) gas mixture) plasmas have been diagnosed using a quadrupole mass spectrometer (HIDEN ANARYTICAL Ltd., EQP-300) and Langmuir probe system (HIDEN ANARYTICAL Ltd., ESPion).

¹This work was partly supported by KAKENHI (No.26420247), and a “Grant for Advanced Industrial Technology Development (No.11B06004d)” in 2011 from the New Energy and Industrial Technology Development Organization (NEDO) of Japan.

Akinori Oda
Faculty of Engineering, Chiba Institute of Technology

Date submitted: 19 Jun 2015

Electronic form version 1.4