Abstract Submitted for the GEC15 Meeting of The American Physical Society

Fundamental of a Planar Type of Inductively Coupled Thermal Plasma (ICTP) on a Substrate for a Large-area Materials Processings MAIKAI SUANTIAL, MIKA AKAO, HIROMITSU IRIE, YUJI MARUYAMA, YA-SUNORI TANAKA, YOSHIHIKO UESUGI, TATSUO ISHIJIMA, Kanazawa University, KANAZAWA UNIVERSITY TEAM — In this paper, the fundamental of a planar type Ar inductively coupled thermal plasmas (ICTP) with oxygen molecular gas have been studied on a substrate. Previously, we have developed a planar-ICTP torch with a rectangular quartz vessel with an air core coil or a ferrite core coil instead of a cylindrical tube for a large-area materials processing. For adoption of such a planar-ICTP to material processings, it needs to sustain the ICTP with molecular gases on a substrate stably. To consider the uniformity of the ICTP formed on the substrate, spectroscopic observation was carried out at 3 mm above the substrate. Results showed that the radiation intensities of specified O atomic lines were almost uniformly detected along the surface of the substrate. This means that O excited atoms, which are important radicals for thermal plasma oxidation, are present in planar-ICTP uniformly on the substrate.

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Date submitted: 18 Jun 2015

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