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Study on plasma parameter in oxygen plasma using a hybrid plasma source KWAN-YONG KIM, KYUNG-HYUN KIM, YOUNG-HUN HONG, HO-JUN MOON, CHINWOOK CHUNG, Hanyang University — The characteristics of oxygen plasma are studied in a hybrid plasma source by adjusting the current flow through each source. The hybrid plasma source consists of a bias electrode at the top and an antenna at the bottom, which connected in parallel. A single RF power generator and impedance matching system is used, and the variable capacitor is installed in series at the antenna to control the current flow of each sources. A single reactor is divided into two discharge spaces according to plasma sources. In the primary space, the low-density plasma is generated via the capacitive coupling of the bias electrode, and the O2 gas is decomposed to the O radical. In the secondary space, a high-density plasma is generated via the inductive coupling of the antenna coil, and once again the O2 gas is decomposed to the O radical. It is found that there is a potential dip in the middle of reactor and the potential dip is formed to keep two plasmas quasi-neutrality. In this work, Langmuir probe and optical emission spectroscopy (OES) are used to measure the EEDFs and the emission intensity. By adjusting the current ratio of the bias electrode and the antenna, the change of emission intensity of O species was obtained.

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