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A method to measure the negative ion density distribution using Langmuir probes in low-pressure oxygen plasmas AIXIAN ZHANG, CHIN-WOOK CHUNG, Hanyang University — A method, based on the floating harmonic method (FHM), of measuring the density distribution of negative ions is introduced, and the experiment is performed in an inductively coupled oxygen plasma. Electron temperatures and positive ion saturation currents are obtained through the FHM using a DC blocking capacitor. Whereas, the electron saturation currents are measured by applying a DC voltage without the blocking capacitor. Negative ion density profiles along the radial direction are obtained from the electron and positive ion currents. Furthermore, the changes in the distribution of negative ions with various pressures and applied powers are investigated, and they are compared with those from the two-probe theory by Chabert et. al.. This method can measure the negative ion density distributions qualitatively with ease.

Aixian Zhang
Hanyang University

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