

RADIOFREQUENCY PLASMA ION SOURCES FOR NUCLEAR MICROPROBE FACILITIES

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The hydrogen-helium ion injector comprising newly designed radiofrequency ion source with higher brightness ($\sim 100 \text{ A}/(\text{m}^2\text{rad}^2\text{eV})$) and a Wien filter has been designed for use in nuclear microprobe facilities. The helicon discharge was employed for increasing of the radiofrequency source brightness. The radiofrequency ion sources (helicon and multicusp) with compact magnetic systems of permanent magnets have been designed. These ion sources have been operated with current densities of 10 - 130 mA/cm², plasma densities of $10^{11} - 10^{12} \text{ cm}^{-3}$ and radiofrequency power input into the plasma of 40 - 300 W.