

Abstract Submitted
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Photon-assisted Beam Probes for Low Temperature Plasmas ALVARO GARCIA DE GORORDO, GARY A. HALLOCK, The University of Texas at Austin — The Heavy Ion Beam Probe (HIBP) diagnostic has successfully measured the electric potential in a number of major plasma devices in the fusion community. In contrast to a Langmuir probe, the HIBP measures the exact electric potential rather than the floating potential. It is also has the advantage of being a very non-perturbing diagnostic. We propose a new photon-assisted beam probe technique that would extend the HIBP type of diagnostics into the low temperature plasma regime. We expect this method to probe plasmas colder than 10 eV. The novelty of the proposed diagnostic is a VUV laser that ionizes the probing particle. Excimer lasers produce the pulsed VUV radiation needed. These new photo-ionization techniques can take an instantaneous one-dimensional potential measurement of a plasma and are ideal for nonmagnitized plasmas where continuous time resolution is not required, as in plasma processing of semiconductors. It should be noted that the variation of plasma conditions over a wafer surface causes a very problematic non uniformity in the resulting chips.

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