

Abstract Submitted  
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**Retarding field analysis of the time resolved ion energy distribution at a biased electrode** DAVID GAHAN, Dublin City University, BORISLAV DOLINAJ, Impedans Ltd., MIKE HOPKINS, Dublin City University — Retarding field energy analyzers (RFEAs) are commonly used to measure the ion energy distribution function (IEDF) at grounded and driven electrodes in plasma reactors. At the grounded surface the RFEA operation is easier to implement due to the absence of large voltages. At the driven electrode the RFEA design is more complex. Filtering techniques are used to ensure the entire RFEA floats at the electrode bias potential. If the discharge, or the substrate electrode, is driven with a pulsed signal the time resolved IEDFs through the pulse cycle are desirable. RFEAs and mass spectrometers have been used to make time resolved measurements of the IEDF at grounded surfaces in discharges pulsed in the tens/hundreds of kHz range. Time resolved measurements made at a pulsed bias surface are more complicated, mainly because of the need to incorporate low pass filters to allow the RFEA to float at the bias potential. Here, we present time resolved IEDF measurements at a pulsed/rf driven electrode in the kHz range. The RFEA body is allowed to float at the bias potential while the internal components are rf grounded. The ion retarding potential is always determined relative to the instantaneous RFEA body potential. Time resolved IEDFs are presented for various square pulse and sinusoidal bias waveforms.

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