

Abstract Submitted  
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**IEDF Skew Control Using Phase Locked Dual Frequency RF Drive** HAMILTON CLARK, THERESA KUMMERER, NC State University, DAVID COUMOU, MKS Instruments, STEVEN SHANNON, NC State University — The distribution of ion energies incident on plasma facing surfaces can have a significant impact on process characteristics. Non-sinusoidal [1] and multi-frequency [2] bias drives have demonstrated both the control of IEDF shape and process enhancement brought about by this level of control. In this work, we will present an extension of multi-frequency drive for IEDF control where multiple frequencies that differ by integer multiples are used to drive an RF sheath for ion energy control. By varying the relative voltages and the phase between these independent drives, the distribution skew can be controlled such that the traditional two peak distribution obtained from an RF sheath can be weighted to the low energy peak or the high energy peak with a reasonable level of control. An analytical sheath model is presented to explain this phenomena; experimental measurement of IEDF's using a gridded energy analyzer are also presented, further demonstrating this configuration's ability to control IEDF shape and validating the analytical model used to introduce these concepts.

[1] Buzzi, Ting, Wendt; PSST 18 025009 (2009)

[2] Shannon, Hoffman, Yang, Patterson, Holland; JAP 97, 103304 (2005)

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