

## FREQUENCY PROBE MEASUREMENTS IN PROCESSING PLASMAS\*

D. R. Boris<sup>‡</sup>, S. G. Walton, M. Baraket<sup>‡</sup>, E. H. Lock, and R. F.  
Fernsler

*Plasma Physics Division, Naval Research Laboratory  
Washington, DC 20375*

*<sup>‡</sup>NRL/NRC Postdoctoral Research Associate*

Plasma density measurements are an essential tool in understanding and controlling processing plasmas across a wide range of applications. Charge collection probes (Langmuir probes) are of limited utility in depositing plasmas, high pressure applications or in processes that require the use of reactive gases, as these environments result in unreliable data acquisition. Plasma frequency probes are an attractive alternative to Langmuir probes in such applications since they do not suffer performance degradation in these environments. Frequency probes are capable of measuring plasma density over a range of  $10^8$  to  $10^{12}$   $\text{cm}^{-3}$  and, it is possible to extract the plasma potential and electron temperature. This presentation details the use of plasma frequency probes to measure plasma parameters in unique systems operating at higher pressures or in reactive gases ( $\text{O}_2$  and  $\text{SF}_6$ ). Where possible these measurements are compared with Langmuir probe measurements for identical experimental parameters.

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