

NEW Instrumentation for RF-GD-OES

Volker Hoffmann, IFW Dresden, Institut für Komplexe Materialien, Helmholtzstraße 20, 01069 Dresden, Germany, V.Hoffmann@IFW-Dresden.de

Radio-frequency (rf) powered glow discharges have gained an increasing interest for the analysis of non-conductive samples. There are quite different applications, like the

- bulk analysis of thick insulators (e.g. glass [1]),
- depth profile analyses of very thin films or even of monolayers [2, 3] and
- spatially resolved analysis of organic material by pulsed rf [4].

These applications require special features of the used rf instrumentation. For the analysis of thick insulators e.g. high voltages are needed, whereas the analysis of thin layers is only possible, if the discharge becomes stable in very short time. The generator also should tolerate changes of the impedance at the transition from conducting to insulating layers. At pulsed discharges with pulse length less than 1 ms, there is a special need for fast and reproducible working instrumentation.

Therefore, in addition to the matched systems, IFW has developed free running and frequency controlled systems. Their advantage for special applications will be shown including the presentation of the corresponding electrical parameters. The measurement of the electrical discharge parameters proved to be very essential for the optimization of the equipment and for the evaluation of the analytical results [5].

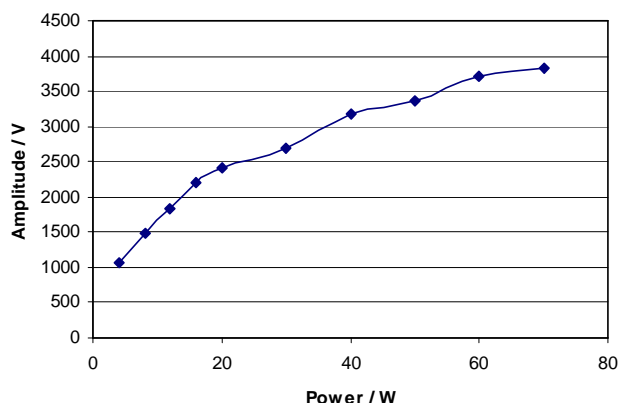


Figure 1: Output voltage of the frequency controlled generator in dependence on forward power at 2,65 MHz (reflected power < 0,1 W)

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