

## RF inductive antenna probe for plasma process monitoring

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Monitoring of plasma parameters such as the electron density is crucial for advanced process control. A non-intrusive inductive probe is described which is sensitive to the plasma via their mutual inductance. The resulting change in impedance of the antenna probe causes a shift in its resonant frequency which is tracked by a phase-locked loop. The antenna is modelled as a

multi-conductor transmission line, where the mutual inductance depends on its complex image in the plasma. We describe the design of a prototype, its calibration by 100 GHz heterodyne microwave interferometry, and preliminary measurements of plasma density.

### Biography

A A Howling obtained his master's degree in science and application of electric plasmas at Oxford University in 1982, followed by PhD at Culham Laboratory, UKAEA. In 1989, he co-founded the industrial plasma applications group with Dr. Ch Hollenstein at the Swiss Plasma Center in EPFL Lausanne. He is currently working as a Senior Scientist in the group of Dr. Ivo Furno for basic plasma physics and applications at EPFL, Switzerland.

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