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Electrical and Plasma Parameters of ICP with High Coupling Efficiency VALERY GODYAK, RF Plasma Consulting — A novel design of ICP with high coupling efficiency together with experimental study of its basic electrical and plasma parameters are given in this presentation. The efficiency augmentation is achieved by using a thin window and an antenna coil enhanced by a ferromagnetic core. Considerable improvement of ICP electrical and plasma characteristics is demonstrated through experiments in ICP operated at 2 MHz in a wide range of argon gas pressures between 1 mTorr and 1Torr, discharge power between 15 W and 0.5 KW and discharge gap between 1.5 and 8 cm. The measured power loss in the ferrite core antenna in this ICP was found to be essentially lower than that in traditional pancake ICPs. It is shown that contrary to prevailing lore, the ICP can stably operate at low plasma density and small gap.

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