

Abstract Submitted
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A direct measurement of the energy flux density in plasma surface interaction REMI DUSSART, ANNE-LISE THOMANN, NADJIB SEMMAR, LAURIANNE PICHON, LARBI BEDRA, JACKY MATHIAS, YVES TESSIER, PHILIPPE LEFAUCHEUX, GREMI, PLASMA SURFACE INTERACTION TEAM — The energy flux transferred from a plasma to a surface is a key issue for materials processing (sputtering, etching...). We present direct measurements made with a Heat Flux Microsensor (HFM) in an Ar plasma interacting with the surface of the sensor. The HFM is a thermopile of about one thousand metal couples mounted in parallel. An Inductively Coupled Plasma in Argon was used to make the experiments. Langmuir probe and tuneable laser diode absorption measurements were carried out to estimate the contribution of ions, neutrals (conduction) and metastables. In order to evaluate the ability of the HFM to measure the part due to chemical reactions, a Si surface in contact with the HFM was submitted to an SF₆ plasma. The direct measurements are in good agreement with the estimation we made knowing the etch rate and the enthalpy of the reaction. Finally, tests were performed on a sputtering reactor. Additional energy flux provided by condensing atoms (Pt) was also measured.

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