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Energy influxes at the substrate in magnetron sputtering processes PIERRE-ANTOINE CORMIER, GREMI/Université d'Orléans, ANNE-LISE THOMANN, GREMI/CNRS, NADJIB SEMMAR, RÉMI DUS-SART, GREMI/Université d'Orléans, JACKY MATHIAS, GREMI/CNRS, ADIL BALHAMRI, STEPHANOS KONSTADINIDIS, ChIPS, RONY SNYDERS, ChIPS/Materia Nova, OLIVIER ANTONIN, CAROLINE BOISSE-LAPORTE, TIBERIU MINEA, LPGP — The study of the energy transfer between plasmas and substrate surfaces is of particular interest in plasma processes of materials. In most works the energy influxes are determined from the surface temperature evolution, which impedes the detection of transient transfers and make difficult to separate all the energetic contributions. We have designed a diagnostic for direct and time resolved measurements. It was successfully used on silicon etching process to determine the energy released by the chemical reaction. In metal thin film deposition by sputtering, the low energy contribution of the condensing atoms was detected and separated from the predominant contribution (plasma effect). In the present contribution we discuss the ability of the energy flux diagnostic to study magnetron sputtering processes, especially when bipolar pulses or high power impulses (HIP-IMS) are used.

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