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Towards a better control of plasma polymerization: a case study of plasma produced polyaniline DARIO SCIACQUA, ERIK VON WAHL, ANDREA JAGODAR, CEDRIC PATTYN, THOMAS LECAS, GREMI UMR 7344, CNRS/University of Orleans, THOMAS STRUNSKUS, Chair for Multicomponent Materials, Institute for Materials Science, Kiel University, EVA KOVACEVIC, JOHANNES BERNDT, GREMI UMR 7344, CNRS/University of Orleans, GREMI UMR 7344, CNRS/UNIVERSITY OF ORLEANS TEAM, CAU KIEL TEAM —
The plasma based synthesis of thin films is frequently used to deposit ultra-thin and pinhole-free films on a great class of different substrates. However, the synthesis of thin films by means of low temperature plasmas is rather complex due to the great number of different species (neutrals, radicals, ions) that are created in the plasma volume. All these species can contribute to the species flux that strikes the substrate and affect there -often in a synergistic manner- the growth of thin films in terms of both the growth speed and the film properties. The control of the species fluxes emerging from the plasma is therefore the main challenge in technological applications. This contribution deals with polymerization processes in a capacitively coupled RF discharge operated in a mixture of argon and aniline. The role of the positive ions for the deposition of thin films in this gas mixture as well as the potential contribution of radicals (as a function of the pumping speed) are in the focus of this contribution. Plasma analysis has been done by means of microwave interferometry and mass spectrometry. The deposited materials have been investigated by FT-IR, NEXAFS and Ellipsometry.

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