

Abstract Submitted  
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**Separated effects of ions, metastables and photons on the properties of barrier layers on polymers**<sup>1</sup> BEATRIX BISKUP, MARC BOEKE, JAN BENEDIKT, ACHIM VON KEUDELL, Ruhr-Universitaet Bochum — Analyses of a-C:H /a-Si:H multilayers on polymer substrates indicated that prolonged ion bombardment influences negatively the properties of the barrier layer, while a short plasma pretreatment can improve the barrier effect. This work is motivated by these results and investigates the influence of different reactive plasma components, namely ions, metastables and VUV-photons, on the properties of the grown barrier layer. To separate the different species and their influence on plasma pretreatment and film growth, we build a grid system, which repels the ions from the substrate, so that only metastables and VUV-photons have an effect on the layer. An integral part of this investigation is, to measure the photon fluxes to the substrate by an intensity calibrated VUV monochromator. For that, a differentially pumped monochromator with a spectral range 30 – 300 nm is used, where the two most prominent argon lines at 104.9 and 106.8 nm can be measured. In this approach we are able to study the different effects of the plasma species and also possible synergy effects, to improve the properties of the barrier layer.

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