

Ion irradiation induced chemical changes of polymers used for optical applications

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Polymers are a class of materials widely used in different fields of applications. In the field of optical telecommunication, polymers are discussed as a new class of materials for the fabrication of passive optical devices. Ion irradiation is a promising method to generate structures with a modified index of refraction, which is necessary for the guidance of light with different wavelengths in an optical device. The behaviour of different polymers which fulfil the requirements of high transparency has been studied during and after ion irradiation. Mass spectroscopy measurements of the reaction products outgassing during ion irradiation were performed as well as infrared (IR) measurements after irradiation. Ion induced chemical changes will be discussed in relation to modified macroscopic properties such as the index of refraction.