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Effects of Ion Species and Irradiating Energy on Polymer Surface Modification by Ion Irradiation

Young-Joon Choi¹⁾, Sung-Ryong Kim¹⁾, Hong-Gui Jang²⁾, Won-Kook Choi²⁾,
Hyung-Jin Jung²⁾, and Seok-Keun Koh²⁾

- ¹⁾ Samyang Group R&D Center, 63-2 Hwaan-Dong, Yusung-Gu, Taejeon, Korea
²⁾ Division of Ceramics, Korea Institute of Science and Technology, Cheongryang P.O. BOX 131, Seoul 130-650, Korea

PET, PC, and PMMA were modified by different kinds of He⁺, Ar⁺, and Kr⁺ ion beam at room temperature. Ion beam was irradiated at 1 keV with 1×10^{14} - $1 \times 10^{17}/\text{cm}^2$ at constant ion beam fluence and a flow rate of oxygen varied within 0 - 6 ml/min. After irradiation, advanced contact angles of modified polymer surface to distilled water were measured using goniometer-type Anglometer.

Moreover, one of alkali metal ion, Li⁺ ion, was irradiated at 200 keV with 1×10^{15} - $1 \times 10^{17}/\text{cm}^2$. The contact angle was also measured and compared to the results of low energy gas ion irradiation. The effects of different size ion species and irradiating energy on polymer surface modification were discussed.