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## Surface and structural properties of potassium-doped glassy carbon irradiated with swift heavy ions

In the present study the effects of swift heavy ion (SHI) irradiation on the surface and structural properties of potassium-doped glassy carbon has been examined. The glassy carbon samples have been irradiated with 167 MeV Xe<sup>26+</sup> ions to fluences of  $6 \times 10^{11}$ ,  $1 \times 10^{12}$ ,  $6 \times 10^{12}$ ,  $1 \times 10^{13}$ ,  $3 \times 10^{13}$ ,  $6 \times 10^{13}$ , and  $1 \times 10^{14}$  ions/cm<sup>2</sup>. The X-ray photoelectron spectroscopy (XPS), Raman spectroscopy and X-ray diffraction (XRD) techniques have been used for analysis of physicochemical properties.

The XPS analysis revealed the changes of the atomic concentration of the surface layers –decrease in the carbon and increase in potassium and oxygen atomic concentration. Also, the fluence-dependent redistribution of the surface functional groups and sp<sup>3</sup> character of the carbon-carbon bonds has been observed. The Raman spectroscopy analysis, performed by using different excitation wavelengths, revealed fluence-dependent structural changes. Additionally, the cross-sectional Raman mapping studies have shown depth evolution of structural changes. XRD analysis revealed the changes in the crystallinity and interlayer spacing of irradiated samples.

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