

Study of structural change in CeO₂ irradiated with high-energy ions by means of X-ray diffraction measurement

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In order to investigate possible crystallographic structural change due to high-density electronic excitation, thin films of CeO₂ have been irradiated with 150-MeV and 200-MeV ¹⁹⁷Au ions. Asymmetric X-ray diffraction peak observed after the irradiations can be explained by the sum of the original peak and the new peak appeared after the irradiations. From the fluence dependence of width and position of the peaks, it is suggested that the new peak may be originated from the irradiation-induced modified region, while the original peak is from the matrix. The results also suggest that the modified region is disordered and has relatively large lattice parameter.