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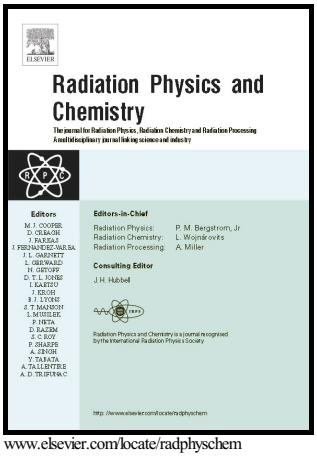

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X-ray absorption study of platinum nanoparticles on an ion-irradiated carbon support

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Abstract

The chemical state and local structure of 2.6-nm-sized platinum (Pt) nanoparticles on an ion-irradiated glassy carbon (GC) substrate were investigated by X-ray absorption fine structure measurements. The partial oxidation of the Pt nanoparticles was confirmed by the peak intensity in the near-edge region of the absorption spectrum. The analysis of the extended region revealed a higher coordination number and shorter bond length of Pt−Pt compared to those of the Pt nanoparticles on the non-ion-irradiated GC. Thus, Pt nanoparticles on the ion-irradiated GC substrate were found to hold a rigid metallic coordination during the oxidation.

Keywords

Platinum nanoparticles, Carbon support, Ion-beam irradiation, X-ray absorption fine

[1] These two authors equally contributed to this study.