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Classification and Application of Diamond-Like Carbon Films Using SR-Based Spectromicroscopy

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The attractive properties of diamond-like carbon (DLC) films consist of chemical inertness, high hardness, excellent tribological behavior, optical properties, and biocompatibility.1,2 These properties make them reasonable for using in a broad range of the industrial applications. For example, the DLC films are used for magnetic storage disks, automotive parts, biomedical devices, cutting tools, and solar cells.1-3 In the last decades, many research groups published the articles of 5,555 in an international journal based on Scopus database which is related to the DLC films through improved by doping with a "hetero element".4 The data plays a significant role in the increment of the DLC applications and fields of studies in future. Currently, the combination of near-edge X-ray absorption fine structure (NEXAFS) and the X-ray photoemission electron microscopy (X-PEEM), so-called spectromicroscopy method at the Beamline 3.2Ua/b, enables us to make a sensitive evaluation of the surface structure together with the chemical states. It is a necessary result because it opens up the way to examine the classification of the DLC films for further understanding of chemical characteristics.

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