Special Issue

Advances in Preparation and Characterization of Nanocrystalline Diamonds and Their Applications

Message from the Guest Editor

Diamond is an allotrope of carbon and has attracted much researcher attention due to its physical and chemical properties. Nanocrystalline diamond is a type of carbon material, typically formed via the chemical vapor deposition (CVD) method, which displays outstanding properties, such as low self-friction coefficient, high wear and corrosion resistance, super hardness, bio-tolerance, and high thermal conductivity. Therefore, nanocrystalline diamond has great potential applications in cutting tools, mechanical seals, biomaterials, sensors, and thermal spread substrates. Recent evidence has indicated that the properties of nanocrystalline diamond are related to its grain size. Hence, it is important to develop new preparation approaches to obtain diamond products with about 5 nm or lower grain size. This finding introduces a significant challenge for researchers to develop new machining and characterization methods. In this Special Issue, recent advances in nanocrystalline diamonds, including bulk material or thin film preparation, machining, characterization, and applications, will be highlighted and discussed.

Guest Editor

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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