Symposium 12:
Novel nanocrystal technologies for advanced ceramic materials & devices

A recent progress in nanocrystal technologies for advanced ceramics-based materials and devices has a great impact on a wide range of research fields, and such technologies are of considerable scientific and practical importance. Most of the useful properties of nanocrystals, nanocrystal assemblies and composites are defined by their size, shape, dimension, nanostructure (interface structure), composition, and combination. The size-, morphology-, nanostructure-, and interface-structure-control techniques are strongly demanded to develop the novel ceramic-based materials and devices exhibiting the extraordinary performance for the applications such as electronics, photonics, sensors, catalysts, energy renewable and storage devices, and so on. This symposium focuses on the synthesis and characterization of nanocrystals, the fabrication of 1D-, 2D-, and 3D-architectures, composites, coating films, bulk ceramics by nanocrystals, and the systems and devices based on nanocrystals. The characterization and calculation for fundamental and advanced properties of isolated nanocrystals as well as their assemblies will be discussed to understand mechanisms of the anomalous properties induced by designed nanoarchitectures.

<PROPOSED SESSION TOPICS>

•Synthesis of nanocrystals
•Fabrication of 1D, 2D, and 3D-assemblies, coating films, and bulk ceramics by using nanocrystals
•Colloidal science for nanostructured materials
•Characterization techniques of nanocrystals and nanostructured architectures
•Fundamental and advanced properties of isolated and assembled nanocrystals
•Systems and devices based on nanocrystals
•Nanomaterial design based on calculation

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<INVITED LECTURES>

Tentative invited lecture information is posted in the following URL;
http://www.ceramic.or.jp/pacrim13/list_of_invited_speakers.html#12