Symposium 5:
Polymer Derived Ceramics (PDCs) and Composites

The conversion of polymers directly into ceramics offers unusual scientific and technological opportunities. The polymers can be shaped in the organic state before being transformed into ceramics, and their properties and nanostructure can be manipulated at the molecular level. Their properties can be controlled based on the chemistry and molecular architecture of the precursors and the high temperature processing adopted. Unusual porous structures can also be produced from them. Their potential applications range from energy and environment, to medicine, sensors, aerospace and defense.
The objective of this Symposium is to address recent developments in PDCs that include processing and innovative shaping approaches (e.g. Additive Manufacturing), characterization of their structure at different length scales, new chemistries, and their structural and functional properties. These attributes arise from the direct relationship between the various scientific and technological aspects, starting with chemical design of the organic molecules, to the processes for fabricating net shape engineering components.
Presentations that emphasize applications of PDCs in fields of energy, life sciences, defense, aerospace, and security are welcomed. Participation of young researchers is especially encouraged.
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<PROPOSED SESSION TOPICS>

•Synthesis of advanced preceramic polymers
•Nanostructure, modeling and thermodynamics of polymer-derived-ceramics
•Structural and functional properties
•Advanced and innovative polymer-to-ceramic conversion methods
•Advanced and innovative fabrication processes, including Additive Manufacturing
•Polymer-derived ceramic matrix composites and in situ formation of nano-composites
•Polymer-derived ceramics for energy applications
•Application of PDCs in various engineering fields

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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#5