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Advanced Structures and Properties for Ceramic Materials

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Deadline for manuscript
submissions:

closed (20 September 2022)

Message from the Guest Editors

With high-T_c oxide superconductors, the colossal permittivity of dielectrics, advanced ceramic materials have earned their scientific nobility both in ancient times and in their use today. Solid state reaction for their elaboration has been complemented by sol-gel routes and core-shell methods. The sintering of powders under controlled atmosphere and the characterization and properties of grain boundaries and of the interface between the grain and the grain boundary remain challenging. The development of methods of diffraction, imaging by transmission electron, scanning electron and atomic force microscopy helps the characterization of structures and properties. Raman spectroscopy is also exploited. Lead-free piezoelectrics, ferroelectrics, multiferroics including their construction by coating of alternating ferromagnetic and ferroelectric thin films, and dielectrics are defined for applications with positive potential. The energy transition raises pressing challenges for which advanced ceramic materials are on the frontline for energy efficiency, energy storage, high-performance capacitors, electrodes for solid fuel cells, and many other promising fields.



mdpi.com/si/104837

Special Issue



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Message from the Editor-in-Chief

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Journal Rank: JCR - Q2 (*Metallurgy & Metallurgical Engineering*) / CiteScore - Q2 (*Condensed Matter Physics*)

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