Special Issue

Cermets: Synthesis, Properties, and Application

Message from the Guest Editor

Cermets belong to metal-ceramic composites, showing attractive general properties originating from high thermal/electrical conductivity, toughness and shock resistance of metals, and impressive hardness/stiffness, chemical stability and function characteristics of ceramics. Hence, cermets are particularly favored to be worked under harsh environment, which could hardly or unsatisfactorily be achieved based on single metal/alloys or ceramics, with typical applications including cutting tools/wear-resistance parts (hot-working dies), anodes for batteries or electrolysis, nuclear-related elements, high-temperature resistant parts (e.g., nozzle or crucible), hot spraying cermet coatings, and other functional or structural metal-ceramic components. In order to enhance the performance of cermets, controlling the fine microstructure is the fundamental route, through composition or structure designing, improved synthesis and processing technology, developed shaping method (die compact, PIM, 3d printing and melt infiltration), and sintering method.

Guest Editor

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