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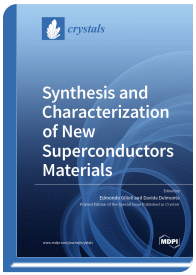
Special Issue Reprint

Synthesis and Characterization of New Superconductors Materials



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Throughout the history of materials science and physics, few topics have captured as much interest as the phenomenon of superconductivity (SPC), discovered in 1911. Perhaps this is because of the intriguing interpretation of the phenomenon, which remains controversial, or for the secret hope of being able to synthesize a material with a critical superconductive transition temperature (TC) high enough to revolutionize the sector of energy generation and transport. As a matter of fact, the search for new superconductor materials has motivated an army of scientists, in particular, after the discovery of high-TC superconductor cuprates (HTS) in the mid-80s. Besides the unremitting interest in HTS, new materials, such as intermetallic borides, iron–nickel-based superconductors, heavy fermion, and organic and superhydride systems, are still delivering outstanding achievements to the scientific community, among which includes thousands of papers and a handful of Nobel prize winners). This Special Issue “Synthesis and Characterization of New Superconductor Materials” is a collection of scientific contributions providing new insights and advances in this fascinating field, addressing issues ranging from the fundamental research (theory and correlation between critical temperature, TC, and structural properties) to the development of innovative solutions for practical applications of superconductivity: Synthesis of new superconducting materials Magnetic and/or electric characterization of the TC transition Role of crystal symmetry and chemical substitutions on TC TC dependence on external stimuli and/or non-ambient conditions Theoretical modeling

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