

Synthesis and Characterization of Micro- and Nanosized Powders

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During the past decade, micro- and nanosized powders of different composition, morphology and properties have been successfully applied in many fields, such as advanced structural and functional materials. The recent developments in synthesis methods made possible to produce single and composite micro- and nanoparticles with unique shape, narrow particle size distribution, controlled bulk and surface compositions and other special, application oriented characteristics. All these opened new vistas for a range of new applications. Among perceived possibilities much interest is paid to structural, chemical, biomedical, and environmental issues. Similarly to other structural and functional materials there are strong and complicated interactions among composition, microstructure, properties and synthesis routes of micro- and nanosized powders. In this talk a review is given on these interactions for materials produced in RF thermal plasma reactor. Models to be presented include ceramic powders, fullerenes and other special materials. The products are characterized for particle size distribution, specific surface area, morphology, bulk and surface chemistry, phase composition and different application oriented properties.