Advanced Processing Methods to maintain nano-features from the powder			
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	Summary		
	Nano- and Ultra Fine Grained materials may be produced by the powder technology route with a wide range of properties strongly dependent on the ability to preserve the nano-features of the starting powder in the consolidated product. The main drawback is indeed grain growth which is a thermally activated phenomenon and may occur during sintering in particular when a high final density is required. The goal of obtaining a nano- ultrafine structure in the final product is pursued on one side by selecting consolidation processes characterized by an overall low heat input (pressureassisted, fast heating, low temperature, short sintering time); on the other side by using starting powders characterized by a great resistance to structural coarsening or, in the case of nanocomposites, able to precipitate nanorinforces in-situ during the sintering process .Powder technology could represent the most favorable solution to produce nano- and ultrafine materials provided that the problems related to the structural coarsening find a reliable and cost-effective solution. These themes will be developed by focusing attention on (not exclusively): ○ Thecontrol of grain growth of nanostructured powders during sintering; ○ The way to obtain nanostructured powders with a great resistance to grain growth; ○ Tthe in-situ formation of nanoreinforces in nanocomposite; ○ The powder consolidation processes characterized by an overall low heat input; ○ The scaling-up of the new processes; ○ The possibility to produce parts with a complex shape; ○ Technological properties of nano- ultrafine materials. Contributions dealing with the theoretical background (including modeling) as well as with the technological (including design and quality control) issues have also been included.		