

Research on Design and Synthesis of Advanced Materials

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Keywords		Nanomaterials, Mechanical properties, 3D printer technology, Thermal management					
Technical		• Ceramic sintering, techniques.	mechanica	l properties	evaluation, micr	rostructure analysis	
Support Skills		Developing composite materials for extreme environment					
		Microstructure control by electric/magnetic field.					

Research Contents

1) Developing new material processing methods using electric field or magnetic field, which can be employed to improve properties such as thermal conductivity of material by controlling orientation of inorganic filler in an organic / inorganic hybrid film



2) Introducing new material design concepts based on highly reliable self-healing materials, then fabricate a multi-layered structure of thermal/environmental barrier coatings (EBC) for the next-generation of aircraft engine blades and demonstrate their performance.



Available Facilities and Equipment

Field emission scanning electron microscope · JSM 7001-FA (JEOL)	Universal Testing Machine (SHIMADZU)		
Scanning confocal laser microscope · OLS 1200	Optical microscopes (OLYMPUS, NIKON)		
Hardness testing machine (Vickers, Rockwell, Shore)	Electric furnaces		

