



Microhardness test of graded SiC/EP rings: Experimental results and FE Modelling

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Ring-shaped test specimens were made of gradient-structured SiC/EP composite produced by centrifugation. Compression tests and microhardness measurements were performed on epoxy matrix composites of even distribution of SiC reinforcement particles in various degrees of vol.%. As a result, compression stress-strain curves were obtained for the composites as well as changes of universal hardness in function of the SiC vol.% in order to have data for the material properties of the layers of the functionally graded structures. Microhardness measurements were simulated by 2D axisymmetrical and 3D FE micro-models in order to reveal the impact of reinforcement particles on material behavior, i.e. to explore the stresses and strains in the vicinity of the indented area as well as to find how functionally graded materials improve the wear resistance of composites.

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