

Thermal Residual Stress in Al₂O₃/SiCnano Ceramic Composites Measured by Nanoindenter**Zhong Ling***State Key Lab. of Nonlinear Mechanics, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China*

Thermal residual stresses in Al₂O₃ ceramics containing SiCnano particles were measured by nanoindentation instrument. As comparison, pure Al₂O₃ ceramics was selected as a reference without thermal residual stress. Considered the contact stiffness would vary due to local heterogeneities of microstructure in current composites, data on the surface sensitivity of a series of samples probed at different peak depths were collected. The experimental results on the residual stress of two composites in local region probed by indenter were obtained. Also the influence of volume fraction of SiC particles to the magnitude of thermal residual stress and the external work and deformation energy during penetration were investigated. Key words: nano-ceramic composite, thermal residual stress, nanoindentation experiment

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