# Wear behavior of $Si_3N_4$-SiC nanocomposite in water

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Silicon nitride is the most excellent materials among structural ceramics. It has been reported that fracture toughness was improved with adding second phase particles, whisker, fiber etc. However, containing of second phase particles enhanced fracture toughness, however flexural strength was degraded. As adding nanosize SiC particles into silicon nitride, the physical properties of the sintered nano-composite were evaluated ; for example, density, hardness, flexural strenth, fracture toughness, the modulus of elasticity. In this study, 2 wt% $Al_2O3$ and 4 wt% $Y_2O_3$ were added into UBE E-10 and 0, 10, 20, 30, 40, 50 vol% nano-SiC powder (Sumitomo T1 powder) were added, respectively. It is hot pressed at 1850℃ for 1 hour. Most of structural ceramics for engineering application are wear resistance. In this study, wear behaviors (in water) of silicon nitride with varying the amount of nano-size silicon carbide were investigated, and was compared to physical properties. Simultaneously wear mechanism will be found out.