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### **Mechanical and microstructural aspects of Si<sub>3</sub>N<sub>4</sub>-based composites**

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Silicon nitride based-composites have been developed with particulate addition, with a significant increase in their mechanical properties, mainly its hardness, toughness fracture and wear resistance. These composites can be applied in several structural applications, such cutting tools. However the introduction of these particulates inhibits the densification of the material, being necessary the use of hot pressing or hot isostatic pressing. In this work samples of Si<sub>3</sub>N<sub>4</sub>-based composites were prepared, with the addition of different proportions (15, 25 and 35% in weight) of TiC or NbC. Samples were sintered at conventional sintering and hot pressing. The obtained bodies were characterized through density (Archimedes method), microstructure (SEM) and mechanical properties (fracture toughness and hardness). The results indicate that the composites containing NbC presented better densification. However an increment in hardness and fracture toughness was not observed, different to observed behavior in Si<sub>3</sub>N<sub>4</sub>-TiC composites.