

Vol. 14, Number 3, 2005

**SYNTHESIS THROUGH SHS OF TITANIUM CARBIDE-TITANIUM  
DIBORIDE-BASED COMPOSITES FOR WEAR RESISTANT  
APPLICATIONS**

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**ABSTRACT**

TiC-TiB<sub>2</sub> composites (60/40 wt %) have been produced through self-propagating high-temperature synthesis (SHS), starting from low-cost raw materials like TiO<sub>2</sub>, B<sub>4</sub>C, and Mg. Using magnesium as a reductant allowed acid leaching of the undesired oxide product (MgO), leaving pure hard materials with fine particle size suitable to be employed in cutting tools manufacturing. The powders were characterized from a morphological and structural point of view. The leached powder were milled, cold pressed and sintered at suitable temperature. The densified samples were characterized by the point of view of cutting tools design.

**Keywords:** TiC-TiB<sub>2</sub> powders, SHS, sintering, cutting tools.