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**Metastability Route to Obtain Nanocomposites
by SHS**

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ABSTRACT

The trend in today's industry toward improving the performance and durability of components stimulates the design and development of advanced materials. In this context, the fabrication of nanostructured materials by competing technologies like SHS represents an attractive possibility. The processing based on metastable transformations represents an attractive route for this aim. Nanostructured powders of the $\text{TiC}_{1-x}\text{-TiB}_2$ system are obtained through combustion processes based on the concept of metastability. The process is based on the rapid cooling by quench of the SHS products immediately after the reaction, yielding inherently nanostructured powder agglomerates. The degree of metastability of the composite powders is evaluated by thermal treatments.

Keywords: SHS, metastability, quench, TiC-TiB_2 , ceramic nanocomposites.