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Synthesis of Ceramics in an SHS Reaction Ignited with the Other One

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ABSTRACT

The necessity of developing new material with better properties has oriented investigations to advanced techniques such as Self-propagating High-temperature Synthesis (SHS). The present study first suggests synthesizing titanium carbide TiC in a direct SHS reaction. Then, using a thermite reaction, the exothermicity of which is even higher and the ignition temperature is smaller, we have ignited the $\text{Ti} + \text{C} \rightarrow \text{TiC}$ reaction. Finally, characterization of the synthesized products has been carried out by X-ray diffraction (XRD) and scanning electron microscopy (SEM) in order to determine compositions and microstructures.