

**Vol. 13, No. 3, 2004**

**Spontaneous Deformation during Self-Propagating  
High-Temperature Synthesis**

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**ABSTRACT**

Spontaneous deformation of Ti–Si, Ti–C, and Ti–B–Fe samples during self-propagating high-temperature synthesis (SHS) has been investigated in the absence of external stresses. High-speed video recording (500 frames/s, spatial resolution ~ 10 μm) showed existence of expansion and shrinking zones (300–400 μm wide) behind or within the combustion front. Addition of blowing agents (titanium hydride, borax) was found to affect the dynamics and mechanism of sample deformation during SHS. The strains arising in the combustion wave have been determined.