

**Low- and High-Temperature Corrosion Resistance
of a Dense Nanostructured MoSi₂ Produced by MAFAPAS**

S. Chevalier, JP. Larpin, E. Gaffet, Z.A. Munir, and F. Bernard

LRRS, UMR 5613 CNRS - University of Burgundy–BP47870, F-21078 Dijon, France

Nanomaterials Research Group, NRG/UMR 5060 CNRS/UTBM 90010 Belfort, France

*Department of Chemical Engineering and Materials Science, University of California,
Davis CA 95616, USA*

GDR “Autocombustion” No 2391 CNRS – BP 47070 – 21078 Dijon

The mechanically activated field activated pressure assisted synthesis (MAFAPAS) process was successfully used to produce dense and nanostructured MoSi₂ compounds. The as-prepared samples were 95 % dense with an average crystallite size of around 60 nm. Their high temperature oxidation behaviours were studied in the temperature range from 400°C to 1000°C in air under atmospheric pressure. The detrimental pest oxidation, usually observed at low temperature (400°C-600°C) with MoSi₂, was never observed, even after 1900 h experiment at 400 and 500°C. These preliminary results are promising for further applications at low as well as at high temperatures under oxidising atmospheres.