

Supporting Information

How Thermal Aging Affects Ignition and Combustion Properties of Reactive Al/CuO Nanolaminates: A Joint Theoretical/Experimental Study

A. Estève ¹, G. Lahiner ¹, B. Julien ¹, S. Vivies ¹, N. Richard ² and C. Rossi ^{1,*}

¹ LAAS-CNRS, University of Toulouse, 7 Avenue du colonel Roche, 31077 Toulouse, France; aesteve@laas.fr (A.E.); glahiner@laas.fr (G.L.); bjulien@laas.fr (B.J.); svivies@laas.fr (S.V.)

² CEA-DAM, DIF, 91297 Arpajon, France; nicolas.richard@cea.fr

* Correspondence: rossi@laas.fr

Table S1: Physical and thermodynamic parameters used in the model

The enthalpies and temperatures associated to the Al+CuO chemical phase transitions, as well as the melting and boiling of all species, are extracted from the CRC Handbook of Chemistry and Physics [1] and reported here below. We consider these literature values, corresponding to solid/gas equilibrium contexts, since there is no data relative to thin films. The equations describing the specific heat as a function of the temperature for each species come from the NIST Chemistry WebBook: <http://webbook.nist.gov/chemistry/>.

	Al	CuO	Cu ₂ O	Cu	Al ₂ O ₃
Density (kg.m ⁻³)	2698	6313	5983	8960	3970
Molar mass (g.mol ⁻¹)	26.98	79.54	143.08	63.54	101.96
Molar enthalpy of formation (kJ.mol ⁻¹)	0	-157.3	-168.6	0	-1675.7
Thermal conductivity (W.m ⁻¹ .K ⁻¹)	237	0.847	1	401	10
Heat of fusion (kJ.mol ⁻¹)	10.79	17.47	17.47	13	111
Melting point (°C)	660	1326	1232	1085	2054
Boiling point (°C)	2470	1997	1797	2562	2977

[1] W.M. Haynes, D.R. Lide, T.J. Bruno, CRC handbook of chemistry and physics: a ready-reference book of chemical and physical data., CRC Press, 2017.