

Vol. 14, Number 4, 2005

Synthesis of Ternary Phases in the C-Mg-Ni System by Combustion

A. Martinelli¹, M. Ferretti² and M.R. Cimberle³

¹LAMIA – National Institute for the Physics of Matter (INFM), C.so Perrone 24, I-16152, Genova, Italy

²LAMIA – INFM & Dipartimento di Chimica e Chimica Industriale, Via Dodecaneso 31, I-16146, Genova, Italy

³CNR – IMEM sezione di Genova c/o Dipartimento di Fisica, Via Dodecaneso 33, I-16146, Genova, Italy

ABSTRACT

By applying the combustion synthesis technique on stoichiometric elemental powder compacts and subsequent suitable isothermal annealing treatments, the following three crystalline compounds were prepared: $Mg_xC_yNi_3$, $MgNi_2(C)$, $Mg_2Ni(C)$. The samples were analyzed by means of X-ray and synchrotron powder diffraction and scanning electron microscopy, coupled with electronic microprobe analyses. Their electric and magnetic properties were investigated between 1.5 and 300 K.

Keywords: $MgCNi_3$, $Mg_2Ni(C)$; $MgNi_2C_y$; SHS; Rietveld refinement.