

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**New Superconducting Material:  $\text{Mg}_2\text{SnX}$  ( $\text{X} = \text{C}, \text{B}$ )**<sup>1</sup> ANTONIO JEFFERSON MACHADO, Departamento de Engenharia de Materiais - Escola de Engenharia de Lorena - USP, BRUNO DE GODOI GURATTI, AUSDINIR DANILO BORTOLOZO, CARLOS ALBERTO DOS SANTOS, DEMAR TEAM — In the Mg-Sn system, there is only one intermetallic phase of  $\text{Mg}_2\text{Sn}$  composition. This intermetallic phase crystallizes in a cubic symmetry with prototype  $\text{CaF}_2$  structure, named anti-fluorite. About three years ago, our group reported the existence of superconductivity in the  $\text{Mg}_2\text{SnB}$  intermetallic phase with a superconducting critical temperature close to 35 K [1]. In this intermetallic phase the boron atoms occupy the interstitial sites available in the structure. This work shows that, besides boron atoms, carbon also can occupy the interstitial sites in the same structure and can also induce superconductivity in the system with high critical superconducting temperature. This conclusion is sustained by resistivity, magnetization, and X-ray diffraction measurements. This report is based upon work supported by FAPESP (2005/01257-9). [1] B. Ferreira, C. M. Franco, C. A. M. dos Santos, D. Rodrigues Jr., L. Ghivelder, and A. J. S. Machado; Phys. C 408- 410, 148 (2004)

<sup>1</sup>This report is based upon work supported by FAPESP (2005/01257-9).

Antonio Jefferson Machado  
Departamento de Engenharia de Materiais -  
Escola de Engenharia de Lorena - USP

Date submitted: 12 Dec 2007

Electronic form version 1.4