Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Synthesis and properties of a new superconducting compound (ZrNixS2) ARTHUR SCARAMUSSA, Escola de Engenharia de Lorena - Universidade de Sao Paulo, ZACHARY FISK, Departments of Physics and Astronomy, University of California at Irvine, ANTONIO JEFFERSON MACHADO, Escola de Engenharia de Lorena - Universidade de Sao Paulo, DEPARTMENTS OF PHYSICS AND ASTRONOMY, UNIVERSITY OF CALIFORNIA AT IRVINE - IRVINE, CA 92697, USA COLLABORATION — Since the discovery of superconductivity in chalcogenides in Fe-Se system and in iron pnictides much attention have been give for synthesis of new materials which can exhibit superconductivity. Within this context in this work we show results which suggest that $ZrNi_xS_2$, where x can assume 0.3, 0.5 and 0.8 values, is a new superconductor material. This compound crystallizes in a new crystallographic structure with hexagonal symmetry belongs to the space group R – 32/m. Indeed this compound is a variation of the Zr_3S_4 which can be considered as the prototype structure of this new compound ($ZrNi_xS_2$). In this prototype structure zirconium atoms may occupy two different sites in the structure. Thus, nickel atoms substitute zirconium in a specific site of the structure. These results suggest that superconducting critical temperature is dependent of the nickel content in this new compound. The optimum Ni content yield to $T_c \sim 9.8$ K.

Arthur Scaramussa
Escola de Engenharia de Lorena - USP

Date submitted: 27 Nov 2011 Electronic form version 1.4