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Synthesis and properties of a new superconducting compound (ZrCu_xSe₂) ANA CAROLINA GENEROSO, NAIARA BAPTISTA, SERGIO RENOSTO, ANTONIO JEFFERSON MACHADO, Escola de Engenharia de Lorena, Universidade de Sao Paulo — 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 the existence of a new selenite intercalate with copper atoms in the ZrCu_xSe₂ nominal composition, where x is $0.1 \leq x \leq 0.4$ interval. A superconductor behavior begins in the ZrCu_{0.3}Se₂ with superconducting critical temperature close to 9.0 K. ZrSe₂ is a compound which crystallize in the hexagonal symmetry with CdI₂ prototype structure belongs to the space group P-32/m1. Indeed, copper is intercalating between Se-Se which have van der Walls interaction in the ZrSe₂ compound. This intercalation with copper atoms, produce superconductivity in the matrix compound (ZrSe₂) which is not superconductor. The copper intercalation in the matrix compound crystallizes in a LiCrS₂ prototype structure.

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