

25^e Congrès Général
de la Société Française
de Physique 



Contribution ID: 130

Type: **Orale**

A New Superhard Nitride Superconductor

Monday, 8 July 2019 17:30 (20 minutes)

We report the discovery of superconductivity in a new family of orthorhombic Tantalum nitride synthesised under high pressure and stable after pressure releasing, with a superconducting transition temperature T_c of 3K at ambient pressure, that reaches 9-K at 18-GPa. This compound exhibits a unique combination of structural and electronic properties, with a very high hardness combined with a significant ductility and high fracture toughness together with a superconducting phase. Interestingly, low oxygen content has been detected with a large effect on the T_c . This potential doping effect together with potential superconducting coupling via light element nitrogen ions phonons and strong covalent bonds makes this new family promising for the search of high- T_c light-element-based superconductors.

Choix de session parallèle

1.2 La supraconductivité par couplage électron-phonon dans les composé à éléments légers: vers la température ambiante?

Primary authors: Dr PAWBAKE, Amit (Institut Néel-CNRS); Prof. ZERR, Andreas (LSPM-CNRS); ROSUEL, Adrien (CNRS); Prof. SULPICE, André (UGA-CNRS); Dr RODIÈRE, Pierre (CNRS-Institut Néel); Prof. NUNEZ-REGUEIRO, Manolo (CNRS-Institut Néel); Dr KLEIN, Thierry (UGA-CNRS); Prof. MARCENAT, Christophe (CEA-Grenoble); Dr D'ASTUTO, Matteo (CNRS-Institut Néel); Dr MÉASSON, Marie-Aude (CNRS-Institut Néel)

Presenter: Dr MÉASSON, Marie-Aude (CNRS-Institut Néel)

Session Classification: Séance Parallèle