



Weekly Seminar

Emerging electronic and magnetic materials based on Ag(II)

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Time: 4:00pm, May. 16, 2018 (Wednesday)

时间: 2018年5月16日 (周三) 下午4:00

Venue: Room W563, Physics Building, Peking University

地点: 北京大学物理楼西563

Abstract

Silver(II) fluorides are represented by over a hundred distinct stoichiometries,¹ and rich crystal chemistry, but due to their high reactivity they are often viewed as exotic even by chemists. The interest in these materials from solid state physics and materials point of view stems from extremely strong magnetic superexchange interactions which they may host,^{2,3,4} substantial magnetic anisotropy,⁵ as well as possibility of generating superconductivity^{1,6} in two-dimensional fluoroargentate(II) systems,⁷ as outlined in a recent contribution.⁸ The new experimental and theoretical findings for selected silver(II) fluorides will be presented in this talk, combining both chemistry and physics perspectives. The most recent high-pressure studies leading to unprecedented polymorphic structures, will also be briefly discussed.^{9,10} It will ultimately be shown that oxocuprate physics may emerge without copper.^{7,11}

1 Angew. Chem. Int. Ed. Engl. 2001, 40, 2742.

2 Phys. Stat. Sol. RRL 2008, 2, 71.

3 Chem. Commun. 2013, 49, 6262.

4 Angew. Chem. Int. Ed. Engl. 2017, 56, 10114.

5 Phys. Rev. B 2017, 96, 155140.

6 Solid State Commun. 2004, 130, 137.

7 Manuscript submitted, 2018; arXiv:1804.00329.

8 J. Supercond. Novel Magnet. 2018, 31, 737.

9 Dalton Trans. 2017, 46, 14742.

10 Inorg. Chem. 2017, 56, 14651.

11 *Unique silver(II) fluorides: the emerging electronic and magnetic materials* ; in: Photonic and Electronic Properties of Fluoride Materials, Eds. A. Tressaud & K. Poeppelmeier, 231-260, Elsevier 2016.

About the Speaker

Wojciech Grochala (b. 1972) has studied chemistry at the University of Warsaw (PhD 1998, DSc 2005, full prof. 2011), as well as during postdoctoral stays with Roald Hoffmann at Cornell, USA (1999–2000), and Peter Edwards at Birmingham, UK (2000–2001). Since 2005 he has been heading the Laboratory of Technology of Novel Functional Materials at the center of New Technologies, UW – now with 25 group members. His interests are focused around silver, fluorine, and hydrogen chemistries, strong oxidizers, magnetic materials, alloys, superconductors, noble gas compounds, energy storage, and high pressure sciences, while aiming at fine synergy of experiment and theory.