



UNIVERSITÀ DI PARMA
DIPARTIMENTO DI SCIENZE MATEMATICHE, FISICHE E INFORMATICHE
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SEMINARIO di FISICA della MATERIA



Martedì 13 dicembre, ore 15
Aula Maxwell, Plesso di Fisica

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Ag fluorides as a replacement for Cu oxides towards high- T_C superconductivity

Abstract: Recent two decades of research on silver(II) fluorides led to realization of their unusual properties, encompassing: marked covalence of Ag–F bonds [1], strong Ag-Ag superexchange [1,2], atypical high pressure phase transitions [3], and close similarity to copper(II) oxides [1,2,3,4] and to BaBiO₃ [4] (magnetic/CDW precursors of superconductivity). When properly nanoengineered and doped, Ag(II) fluorides could become superconducting [1] with T_C up to ca. 200 K [5]. Novel “chemical capacitor” setup opens a nice route to achieve doping [5,6].

[1] W. Grochala, R. Hoffmann, *Angew Chem Int Ed* 40(15): 2742 2001; J. Gawraczyński et al., *PNAS* 116(5): 1495 2019; W. Grochala et al., *ChemPhysChem* 4(9): 997 2003; N. Bachar et al., *Phys Rev Res* 4(2): 023108 2022.

[2] T. Jaroń et al., *Phys Stat Sol RRL* 2(2): 71 2008; D. Kurzydłowski, W. Grochala, *Angew Chem Int Ed* 56(34): 10114 2017.

[3] A. Grzelak et al., *Dalton Trans* 46(43): 14742 2017; A. Grzelak et al., *Inorg Chem* 56(23): 14651 2017; D. Kurzydłowski et al., *Chem Commun* 54(73): 10252 2018.

[4] M. Derzsi et al., *Phys Rev B* 105(8): L081113 2022; R. Piombo et al., *Phys Rev B* 106(3): 035142 2022.

[5] A. Grzelak et al., *Phys Rev Mater* 4(8): 084405 2020; A. Grzelak et al., *Angew Chem Int Ed* 60(25): 13892 2021.

[6] D. Jezierski et al., *Phys Chem Chem Phys* 24(26): 15705–15717 2022.

Organizzatore: prof. Roberto De Renzi