MS13-1-22 Novel iron fluoride based hybrid materials; structural characterization, electric, dielectric and magnetic properties
#MS13-1-22

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Abstract
Iron fluoride hybrid systems, in which fluoroferrate(II) or fluoroferrate(III) can be used to give rise to fluorescent materials, are a very promising class of materials in a wide range of technological applications exploiting their electric and dielectric properties. Herein, novel organic–inorganic hybrid compound based on iron fluoride, $(H_2Piper)_4$ $[(FeF_6)_2FeF5(H_2O)(H_2O)_4]$ (Piper = Piperazine), **1**, (8-HQN)6$[Fe_4F_{18}]$ (8-hyroxyquinoline = 8-HQN), **2**, were synthesized by hydrothermal method and characterized by X-ray single-crystal diffraction, thermogravimetric analysis (TGA) and differential scanning calorimetric (DSC). Single-crystal X-ray study showed that **1** crystallizes in *P*-1 space group while **2** in *R*3c one. The variation of the *dc* and *ac* conductivity confirmed two phase transitions of **1** and the temperature dependences of dielectric permittivity showed a relaxation process and highlighted the good protonic conduction of this material. The photoluminescence studies of **2** show a significate green emission at 2.14 eV associated with radiative recombination of excitons confined within the organic part when it was excited in UV-visible wavelength in the solid state at room temperature. Finally, the magnetic analysis of **2** exhibits a paramagnetic behaviour above 100 K. [1,2]

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References
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