Experimental report

14/03/2021

Proposal: 5-31-2673 **Council:** 4/2019

Title: Crystal and Magnetic structure study in 3 novel tetrahaloferrate compounds based on bicycle amines with a long-range magnetic ordering.

Research area: Physics

This proposal is a new proposal

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Samples: (C7H13NO)FeCl4
(C7H13N)FeCl4
(C7H11NO)FeCl4

Instrument	Requested days	Allocated days	From	To
D1B	2	2	09/09/2019	11/09/2019
D2B	2	2	11/09/2019	13/09/2019

Abstract:

Recently, the study and application of halometallate compound based on bicycle amines have injected new vitality to the field of molecular ferroelectric thin films. Within this approach we have prepared a series of compounds based on bicycle amines together with halometallate centers to have access to the long-range magnetic order. The inclusion of halometallate centers promote the occurrence of halide···halide and H··halide interactions can modify not only the exchange coupling path but also play a significant role in the stabilization of the crystal structure. Thus, in this proposal we ask for beam-time on the powder diffractometers D2B and D1B to address the question about cooperative magnetic effects, complex anion interaction, and magnetostructural correlation on (quinuclidine)[FeCl4], [(R)-3 Quinuclidinol][FeCl4] and (3-Quinuclidone)[FeCl4] compounds. With this objective we apply for 2 days of beam time on D2B and 1 day on D1B.

Published results in:

- ***J. Mater. Chem. C***, 2020,**8**, 11389-11398 **https://doi.org/10.1039/D0TC02341H**
- ***J. Mater. Chem. C***, 2021, Accepted Manuscript **https://doi.org/10.1039/D0TC05800A**