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Substitution Effects on N₂O Schiff Base Ligands in Unprecedented Abrupt Fe(II) Spin Crossover Complexes with Symmetry Breaking

A family of Fe(II) spin crossover complexes with halogen substituted 5-X-N-(8-quinoly)salicylaldimines (HqsalX, X = F 1, Cl 2, Br 3 and I 4) has been investigated. With N₄O₂ octahedral environments, a somewhat unusual donor system for Fe(II) spin crossover [1], this is the first time that [Fe(II)(qsal-X)₂] complexes have been studied [2]. Compounds 2, 3 and 4 unexpectedly show completed abrupt spin transition at or above RT. Importantly, compound 4 also exhibits the photoconversion efficiency, above 90 % with a T(LIESST) temperature estimated at 54 K. Variable temperature single crystal structures are performed in both LS and HS states for complexes 2 and 3. The influence on spin crossover properties are discussed of intermolecular interactions and structural packing effects in various halogen substitution complexes.

References

- 1 A. Hauser, Ligand Field Theoretical Considerations, in Spin crossover in transition metal compounds , P. Gülich; H. A. Goodwin, Eds. Springer Berlin Heidelberg: 2004; 233, 49-58.
- 2 B. Weber, Coord. Chem. Rev. 2009, 253, 2432-2449.

Keywords or phrases (comma separated)

Fe(II), Spin crossover, Single crystal structure, Magnetic properties

Are you a student?

No

Do you wish to take part in the Student Poster Slam?

No

Are you an ECR? (<5 yrs since PhD/Masters)

Yes

What is your gender?

Female

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