

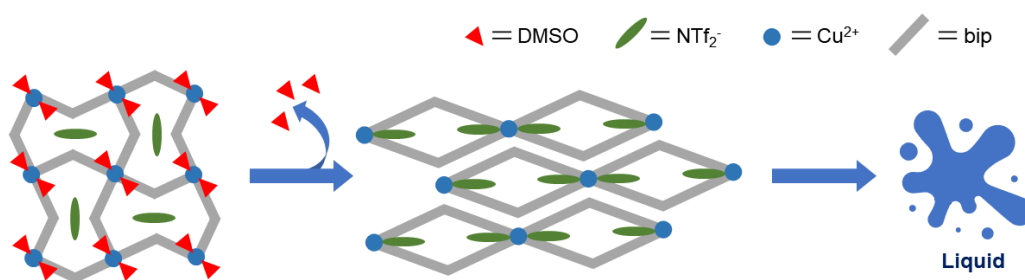
Multiple Structural and Phase Transformations of a Flexible Coordination Polymer with Fluorinated Anion

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In the last two decades, coordination polymers (CPs) with reversible or irreversible structural transformations have been found due to their flexible metal nodes, flexible bridging ligands and flexible assembled structures. Furthermore, a series of liquid and glassy CPs have been reported very recently.¹ These flexible CPs could show interesting properties such as gas separation, sensing and ion conduction. Our group has reported that the fluorinated anion, bis(trifluoromethanesulfonyl)imide (NTf₂⁻), is a good building block for the construction of flexible CPs with structural transformations.² Here, we report a new NTf₂⁻ anion including two-dimensional CP, {[Cu(bip)₂(DMSO)₂]}·2NTf₂ (**1**·2DMSO, bip = 1,3-bis(imidazolyl)propane), showing not only crystal-to-crystal structural transformation but also crystal-to-liquid phase transition.

1·2DMSO irreversibly converted to a one-dimensional CP [Cu(NTf₂)₂(bip)₂] (**1**) after removing DMSO molecules coordinated at the axial sites. During this structural transformation, the recombination of equatorial coordination bonds and weak axial coordination bonds occurred. Moreover, **1** exhibited a reversible crystal-to-crystal structural transformation at 92 °C and an irreversible crystal-to-liquid phase transition at 276 °C.



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