

Deuterium degrees of Freedom of Selectively deuterated (DMe-DCNQI)₂Cu Systems(LT26)

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We have studied thermal properties of the selectively deuterated (DMe-DCNQI)₂Cu system to investigate deuterium degrees of freedom in a methyl basis. Specific heat measurements are systematically performed for systems having various methyl bases of CH₃, CH₂D, CHD₂ and CD₃ by a method based on DTA (Differential Thermal Analysis). In these systems, we discovered an anomalous specific heat due to the deuterium degrees of freedom. We systematically clarified the specific heat of the selectively deuterated methyl bases in the (DMe-DCNQI)₂Cu system. Under an equilibrium condition, these systems do not show a sharp peak induced by a phase transition, but exhibit a Schottky type specific heat in systems having CH₂D and CHD₂ bases. Their energy schemes are determined only by positions of the deuterium atoms in the methyl bases.