



Contribution ID: 50

Type: not specified

## Magnetocaloric effect of three cyanido-bridged coordination polymers based on Mn(II) and Nb(IV)

Tuesday, July 7, 2015 8:30 PM (1h 30m)

Magnetocaloric effect for  $\{[\text{Mn}(\text{II})(\text{pyrazole})_4]_2[\text{Nb}(\text{IV})(\text{CN})_8] \cdot 4\text{H}_2\text{O}\}_n$  ( $n=1, 2, 3$ ),  $\{[\text{Mn}(\text{II})(\text{imH})_2(\text{H}_2\text{O})_4]_2[\text{Nb}(\text{IV})(\text{CN})_8] \cdot 4\text{H}_2\text{O}\}_n$  ( $n=2, 3$ ) and  $[\text{Nb}(\text{IV})\{\mu\text{-CN}\}_4\text{Mn}(\text{II})(\text{H}_2\text{O})_2]_2$  ( $n=2, 3$ ) is reported. The compounds belong to a class of 3D coordination polymers. They exhibit a phase transition to a long range magnetically ordered state at 22.8 K ( $n=1$ ), 24.1 K ( $n=2$ ), and 47 K ( $n=3$ ). Heat capacity measurements by relaxation calorimetry in applied field of 0.1, 0.2, 0.5, 1, 2, 3, 4, 5, 7, and 9 T enabled to determine the magnetic entropy change  $\Delta S_M$  as well as the adiabatic temperature change  $\Delta T_{\text{ad}}$ . The maximum values of  $\Delta S_M$  calculated for a field change of 5 T amount to 6.65 J kg<sup>-1</sup> K<sup>-1</sup> ( $n=1$ ), 9.5 J kg<sup>-1</sup> K<sup>-1</sup> ( $n=2$ ), and 9.01 J kg<sup>-1</sup> K<sup>-1</sup> ( $n=3$ ). The corresponding maximum values of  $\Delta T_{\text{ad}}$  are 1.4 K at 23.8 K ( $n=1$ ), 2.02 K at 25.1 K ( $n=2$ ), and 1.7 K at 49.0 K ( $n=3$ ). The temperature dependence of the exponent  $n$  characterizing field dependence of  $\Delta S_M$  has been estimated. Exponent  $n$  attains the value of 0.64 ( $n=1$ ), 0.67 ( $n=2$ ), and 0.69 ( $n=3$ ) at the transition temperature, which is close to that expected for the three-dimensional Heisenberg universality class. Universal scaling of the magnetic entropy change is discussed.

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**Session Classification:** Posters