

Cover Picture

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The cover picture shows a snow avalanche on the north face of Everest behind the structure of an enantiopure molecular ferromagnet which displays a rare phenomenon: a “magnetic avalanche”. The chiral complex $[\text{Mn}(\text{hfac})_2]$ ($S = 5/2$, spins represented by the red arrows) with an enantiopure nitronyl nitroxide ligand ($S = 1/2$, green arrows) exists as a coordination polymer (hfac = hexafluoroacetylacetonate). These chains are ferromagnetic (and are represented by the blue arrows), since the antiferromagnetically coupled organic- and metallic-centered spins do not compensate. At temperatures below 3 K these chains order magnetically and hysteresis loops open up. However, at 0.13 K (green curve) the width of the loop is smaller than at 0.3 K (orange curve). Thus, at a certain value of applied field there is an abrupt switching of some spins, which releases energy as a local heating. This heat initiates a switching of neighboring spins, which creates more heat and results in the magnetic equivalent of an avalanche. Further details about this optically active material are described by Veciana et al. on p. 586 ff. (Snow avalanche picture courtesy of Albert Castellet[®], and thanks to Pere Oller of the Institut Cartogràfic de Catalunya)

