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New low-dimensional antiferromagnetic compounds based on Cu-pyz chain MARIUSZ KUBUS, Paul Scherrer Institute , ARIANNA LANZA, REBECCA SCATENA, LEONARDO H. R. DOS SANTOS, University of Bern, BJORN WEHINGER, NICOLA CASATI, Paul Scherrer Institute, PIERO MACCHI, University of Bern, LUKAS KELLER, Paul Scherrer Institute, CHRISTOPH FIOLKA, University of Bern, CHRISTIAN RUEGG, Paul Scherrer Institute, KARL W. KRAEMER, University of Bern — Two new Cu2+ coordination complexes, [CuCl(pyz)2](BF4) and [CuBr(pyz)2](BF4) (pyz = pyrazine), were synthesized and their structures determined with single crystal X-ray diffraction. These tetragonal compounds are isostructural and crystallize in space group P4/nbm. The magnetic susceptibility shows a broad maximum around 8 K for both compounds, indicating predominantly two-dimensional (2D) antiferromagnetic interactions localized within the [Cu(pyz)2]2+ layers. A fit of a 2D Heisenberg model to the magnetic susceptibility data results in J = 9.6 K for [CuCl(pyz)2](BF4) and 9.1 K for [CuBr(pyz)2](BF4). Towards lower temperature kinks are observed in the magnetic susceptibility at 4 K for the chloride and 3.6 K for the bromide compound, indicating the onset of long-range 3D magnetic order. The magnetic structures were determined by neutron diffraction. Bragg peaks due to long-range 3D magnetic order are observed below TN = 3.9(1) K for the chloride and 3.7(1) K for the bromide compound. The magnetic unit cell is doubled along the c-axis, the moments are antiferromagnetically coupled both in the a-b plane and along the c-axis.

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