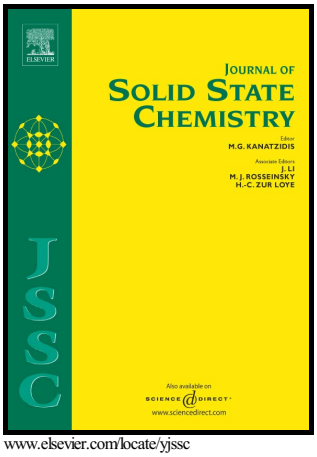

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Slow relaxation and magnetic coupling of magnetization in 3D $Co^{II}_{2-x}Zn^{II}_{x}$ chain-based coordination frameworks with mixed double azide-tetrazolate bridges

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Abstract

Five novel isomorphous 3D $Co^{II}_{2-x}Zn^{II}_{x}$ ($0 \le x \le 2$) coordination frameworks formulated as $[Co^{II}_{2-x}Zn^{II}_{x}(pymtz)_2(N_3)_2(H_2O)_2]\cdot 2H_2O$, (x = 0 (**1**), 1 (**2**), 1.5 (**3**), 1.7 (**4**), 2 (**5**), pymtz = 5-(3-pyrimidyl)tetrazolate) were synthesized by in situ hydrothermal reaction and then structurally and magnetically characterized. In these compounds, adjacent metal ions are linked by mixed double azide and tetrazolate bridges to give 1D coordination chains, and each chain is interlinked by pymtz ligands into 3D frameworks with (3,4,6)-connected net of $(3.6.8)(3^2.6^1.7^3)(3^2.6^2.8^8.10^1.11^2)$ topology. Magnetic studies indicate that the homometallic Co^{II} compound (**1**) exhibits the coexistence of antiferromagnetic ordering and slow magnetic dynamics, while the bimetallic $Co^{II}_{2-x}Zn^{II}_{x}$ series (**2**-**4**) show the innocent blending effect which tends to