

البحث الثامن (بحث رقم 14 .. القائمة الرئيسية)

Title	Synthesis, structural characterization, photo-physical and magnetic properties of cobalt salphen pseudo halide complexes showing meta-magnetic ordering
	.. وتوصيف الخواص المغناطيسية لمر .. اكبات الكوبلت لاشابة الهاليدات
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Journal Information	. J. Mag. Mat. 2018, 452, 488-494.
ISSN	0304-8853
Impact factor	Q2 - 2.68

Abstract

The solvo-thermal syntheses of $[(\text{CoSalphen})_2\text{Co}(\text{SCN})_2]_n$ (1), $\text{CoSalphen}(\text{NH}_3)(\text{N}_3)$ (2), $\text{Na}[\text{Co}^{\text{III}}\text{salphen}(\text{N}_3)_2]$ (3), $\text{Na}[\text{Co}^{\text{III}}\text{salen}(\text{N}_3)_2]$ (4) and $\text{Co}^{\text{III}}\text{salen}(\text{NH}_3)(\text{N}_3)$ (5) {salphen = N,N'-o-phenylene-bis(salicylideneimine)} are reported. The structural studies using X-ray diffraction measurements revealed that 1 crystallizes in a monoclinic C2/c space group. Two cobalt (II) metal centers in penta-coordinated and octahedral local coordination environments are bridged via alternating O and 1,3 SCN bridges resulting in a novel 2D layered coordination polymer. Compound 2 is a trivalent mononuclear cobalt azido complex with an octahedral coordination environment. The magnetic investigations of 1 revealed ferromagnetic coupling ($J = +49.1 \text{ cm}^{-1}$) and meta-magnetic ordering. Time resolved photoluminescence studies of the complexes showed excited state lifetimes of ($s_1 = 0.4675 \text{ ns}$, $s_2 = 5.23 \text{ ns}$) for 1 and ($s_1 = 0.5078 \text{ ns}$, $s_2 = 6.79 \text{ ns}$) for 2.