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Title:	Fragile magnetic order in the honeycomb lattice Iridate Na ₂ IrO ₃ revealed by magnetic impurity doping
Authors:	Mehlawat, K. (/jspui/browse?type=author&value=Mehlawat%2C+K.) Sharma, G. (/jspui/browse?type=author&value=Sharma%2C+G.) Singh, Yogesh (/jspui/browse?type=author&value=Singh%2C+Yogesh)
Keywords:	Fragile magnetic honeycomb Iridate Na ₂ IrO ₃ magnetic impurity
Issue Date:	2015
Publisher:	American Physical Society
Citation:	Physical Review B - Condensed Matter and Materials Physics, 92 (13)
Abstract:	We report the structure, magnetic, and thermal property measurements on single-crystalline and polycrystalline samples of the Ru-substituted honeycomb lattice iridate Na ₂ Ir _{1-x} Ru _x O ₃ (x=0,0.05,0.1,0.15,0.2,0.3,0.5). The evolution of magnetism in Na ₂ Ir _{1-x} Ru _x O ₃ has been studied using dc and ac magnetic susceptibilities and heat-capacity measurements. The parent compound Na ₂ IrO ₃ is a spin-orbit-driven Mott insulator with magnetic order of reduced moments below T _N =15K. In the Ru-substituted samples the antiferromagnetic long-range state is replaced by a spin-glass-like state even for the smallest substitution suggesting that the magnetic order in Na ₂ IrO ₃ is extremely fragile. We argue that these behaviors indicate the importance of nearest-neighbor magnetic exchange in the parent Na ₂ IrO ₃ . Additionally, all samples show insulating electrical transport.
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