Title:	Aggregation induced phosphorescence active rollover iridium(iii) complex as a multi-stimuli-responsive luminescence material
Authors:	Kaur, Gurpreet (/jspui/browse?type=author&value=Kaur%2C+Gurpreet) Choudhury, A.R. (/jspui/browse?type=author&value=Choudhury%2C+A.R.)
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Abstract:	On reaction of 2,2′-bipyridine with iridium(iii), an "aggregation induced phosphorescence (AIP)" active "rollover" complex, [Ir(PPh3)2(bipy-H)(Cl)(H)] (bipy-H = κ2-N,C-2,2′-bipyridine) or [Ir(bipy-H)], is obtained. The emission colour changes from bluish-green to yellowish-orange and vice versa after repeated protonation and deprotonation of [Ir(bipy-H)], respectively, which unequivocally supports its reversible nature. [Ir(bipy-H)] is sensitive to acids with different pKa values. Tuning of the emission properties can be achieved in the presence of acids with different pKas. This behaviour allows the complex, [Ir(bipy-H)], to function as a phosphorescent acid sensor in both solution and the solid state, as well as a chemosensor for detecting acidic and basic organic vapours. The protonated form, [Ir(bipy-H)H+], which is generated after protonation of [Ir(bipy-H)] can be used as a solvatochromic probe for oxygen containing solvents, and also shows vapochromic properties. The emission, absorption and 1H NMR spectra of [Ir(bipy-H)] under acidic and basic conditions demonstrate its reversible nature. DFT based calculations suggest that changes in the electron affinity of the pyridinyl rings are responsible for all these processes.
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