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Title:	Catalytic aspects of a nickel(II)–bipyridine complex towards phosphatase and catechol dioxygenase activity
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Abstract:	A mononuclear nickel(II) complex, [Ni(bpy)2(OH2)(NO3)](NO3) (1) [bpy = 2,2′-bipyridine], has been synthesised and structurally characterised by routine analytical techniques including a single crystal X-ray diffraction study. X-ray crystal structure analysis shows that 1 crystallises in the triclinic system with the space group and adopts an octahedral geometry. The nickel(II) complex has been evaluated as a functional model for phosphatase and catechol dioxygenase enzymes by using 4-nitrophenylphosphate (PNPP) and 3,5-di-tert-butylcatechol (DTBC) as model substrates in aqueous-DMF and acetonitrile media respectively. This mononuclear nickel complex exhibits good hydrolytic phosphoester cleavage efficiency, viz. a kcat value of 8.42 × 103 h−1, and produces mostly benzoquinone (kobs = 2.3 × 10−3 min−1) and intradiol cleavage products during an investigation of catechol dioxygenase activity.
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