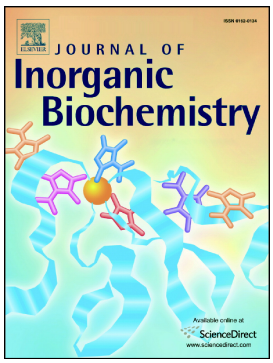

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A series of novel complexes firstly constructed by 1,4-Pheny lenedioxydiacetic acid plays a role in disruption of DNA gene expression and induction of apoptosis

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A set of five metal–organic frameworks, namely, **$[Cd_2(L)_2BIP(H_2O)_2\cdot 6H_2O]_n$ (1)**, **$[Ce(L)_{1.5}(H_2O)_2\cdot H_2O]_n$ (2)**，**$[Sm(L)_{1.5}(H_2O)_2\cdot 3H_2O]_n$ (3)**，**$[Gd(L)_{1.5}(H_2O)_2\cdot 3H_2O]_n$ (4)**，**$[Ho(L)_{1.5}(H_2O)_2\cdot 3H_2O]_n$ (5)**，have been prepared under hydrothermal conditions (1,4-H_2L=1,4-Pheny lenedioxydiacetic acid;1,4-BIP=1,4-bis(2-pyridylmethyl)piperazi -ne; C2H5OH=EtOH). The long BIP ligand (N···N separation of ca. 8.355 Å) induces interpenetration of **1** to increase both the framework stability and the density of effective catalytic metal centers. Characterization of all complexes has been carried out by means of IR spectroscopy, single crystal and powdered sample X-ray diffraction (PXRD) through conventional and synchrotron radiation, Thermogravimetric (TG), fluorescent measurement (liquid and solid), DNA molecular docking, cancer cell apoptosis morphology through fluorescent inverted microscope, IC_{50}, which the cytotoxic activity of the complexes was tested against twodifferent cancer and one normal cell lines. The results indicate that all the complexes are potential fluorescent light-emitting materials and the flour (**2**, **3**, **4**, **5**) complexes present remarkable anti-cancer effect.

KEYWORDS

DNA binding, Apoptotic, crystal structure, molecular docking