**Fluorescent phenanthroimidazoles functionalized with heterocyclic spacers: synthesis, optical chemosensory ability and Two-Photon Absorption (TPA) properties**

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## Electronic Supplementary Information

**1. Photos of colour changes of compound 7c after interaction with anions and cations in ACN and ACN/$H_2O$ (95:5)**

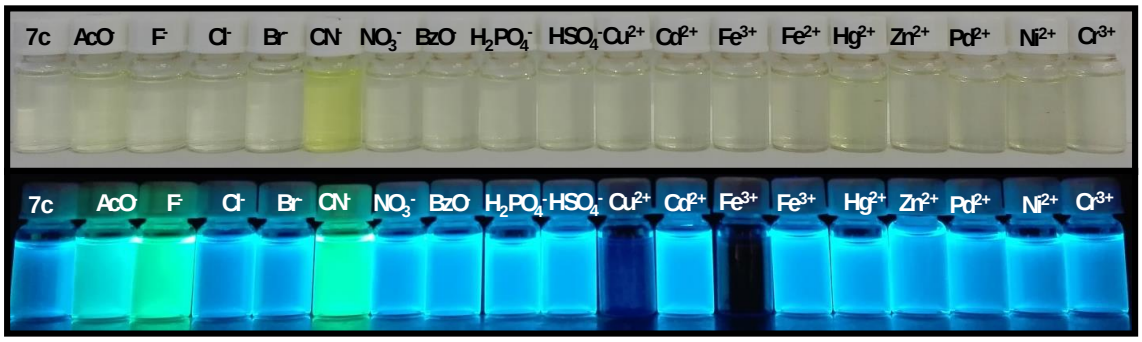


**Figure S1**: Colour changes and fluorescence changes of compound **7c** ($10^{-4}$ M in ACN) in the presence of 50 equiv. of $AcO^-$, $F^-$, $Cl^-$, $Br^-$, $CN^-$, $NO_3^-$, $BzO^-$, $H_2PO_4^-$, $HSO_4^-$, $Cu^{2+}$, $Cd^{2+}$, $Fe^{3+}$, $Fe^{2+}$, $Hg^{2+}$, $Zn^{2+}$, $Pd^{2+}$, $Ni^{2+}$ and $Cr^{3+}$ (in the form of tetrafluorborate or perchlorate salts).

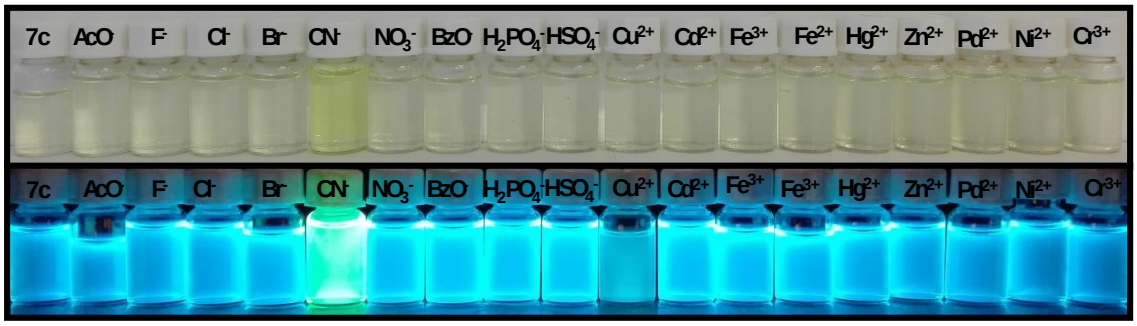


**Figure S2**: Colour changes and fluorescence changes of compound **7c** ($10^{-4}$ M in ACN/$H_2O$ (95:05)) in the presence of 50 equiv. of $AcO^-$, $F^-$, $Cl^-$, $Br^-$, $CN^-$, $NO_3^-$, $BzO^-$, $H_2PO_4^-$, $HSO_4^-$, $Cu^{2+}$, $Cd^{2+}$, $Fe^{3+}$, $Fe^{2+}$, $Hg^{2+}$, $Zn^{2+}$, $Pd^{2+}$, $Ni^{2+}$ and $Cr^{3+}$ (in the form of tetrafluorborate or perchlorate salts).

**2. Quenching efficiency for compounds 5a-c, 6a-b and 7a-c in the presence of different ions**

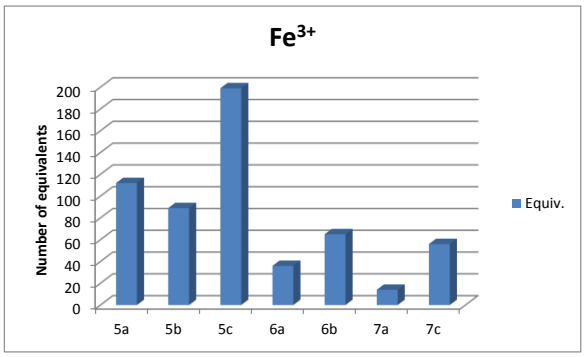


**Figure S3**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN solution in the presence of $Fe^{3+}$.

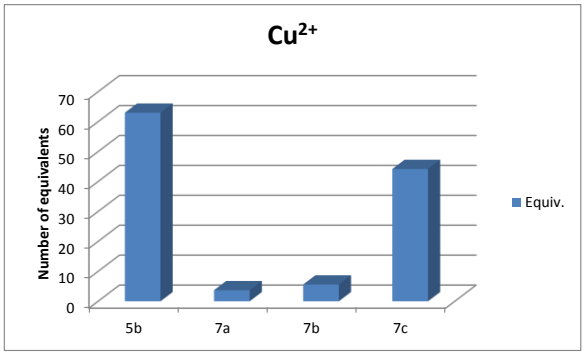


**Figure S4**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN solution in the presence of $Cu^{2+}$.

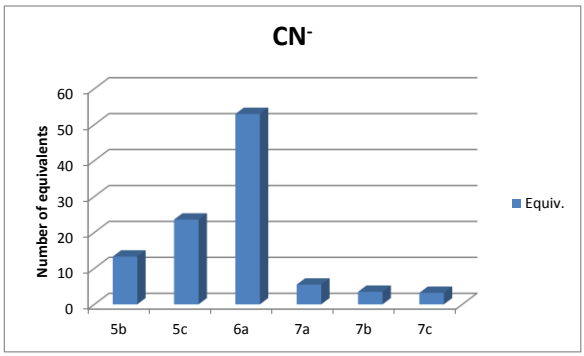


**Figure S5**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN solution in the presence of $CN^-$.

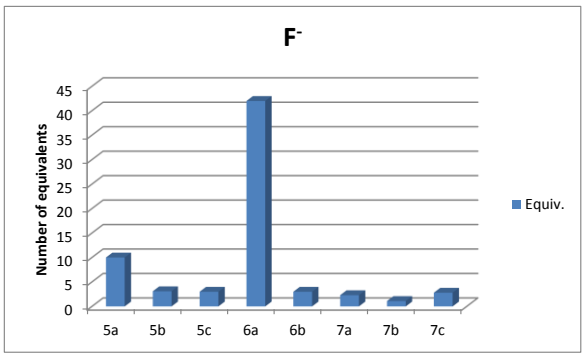


**Figure S6**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN solution in the presence of $F^-$.

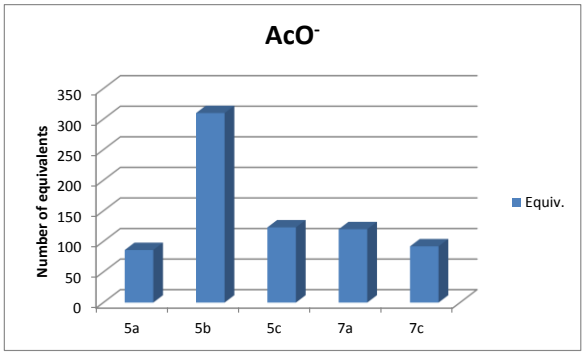


**Figure S7**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN solution in the presence of $AcO^-$.

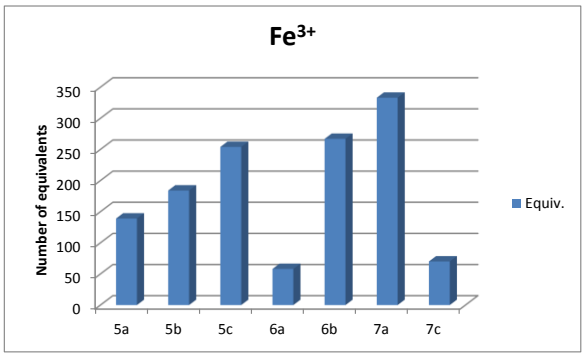


**Figure S8**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN/$H_2O$ (95:5) solution in the presence of $Fe^{3+}$.

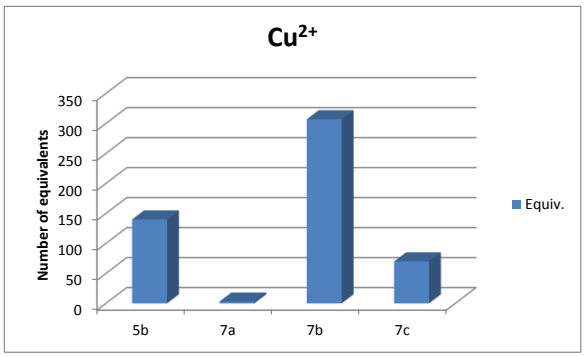


**Figure S9**: Number of equivalents necessary to quench at least 90% of the initial fluorescence intensity of each phenanthroimidazole in ACN/$H_2O$ (95:5) solution in the presence of $Cu^{2+}$.

**3. Proposed mode of interaction of compound 7a with $F^-$, $Cu^{2+}$ and $Fe^{3+}$**

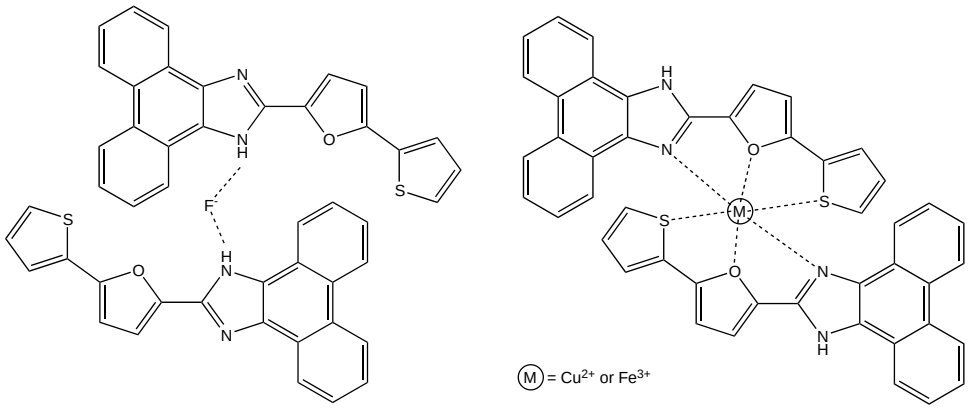


**Figure S10:** Proposed structures of the complexes between compound **7a** (as representative example of the ligand) and $F^-$ (as representative of anions), $Cu^{2+}$ and $Fe^{3+}$ (as representatives of cations).