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Solvent Dependent Triazole-Appended Glucofuranose-Based Fluorometric Sensor for Detection of Au^{3+} Ions

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Abstract : It is well familiar that solvents play a significant role in modern chemistry. Solvents can change the reactivity and physicochemical properties of molecules in a solution. Keeping this in mind, we have designed and synthesized a mono-triazolyl-linked pyrenyl-appended xylofuranose derivative for the detection of metal ions with changing solvent systems. The incorporation of a sugar backbone in the sensor increases the water solubility and biocompatibility. The experimental study revealed that the xylofuranose-based fluorescence probe did not exhibit any specific selectivity towards metal ions in acetonitrile (CH_3CN) solvent. Whereas, we revealed that triazole-linked pyrenyl-appended xylofuranose-based fluorescent sensor would exhibit high selectivity and sensitivity towards Au^{3+} ions in CH_3CN-H_2O (1/1, v/v) system. This observation might be explained by the viscosity and polarity differences of CH_3CN and CH_3CN-H_2O solvent systems. The formation of the sensor-Au^{3+} complex was also established by high-resolution mass spectrometry (HRMS) data of the complex.

Keywords : triazole, furanose, fluorometric, solvent dependent
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