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## Veratraldehyde Appended Organosilicon Probe and its Hybrid Silica Nanoparticles as a Dual Chemosensor for Colorimetric and Fluorimetric Detection of Cu<sup>2+</sup> and Fe<sup>3+</sup> ions

Gurjaspreet Singh<sup>a\*</sup>, Jashan Deep Kaur<sup>a</sup>, Pawan<sup>a</sup>, Sushma<sup>a</sup>, Priyanka<sup>a</sup>, Pinky Satija<sup>b</sup>, K.N. Singh<sup>a\*</sup>, Marı'a Angeles Esteban<sup>c\*</sup>, Cristo'bal Espinosa-Ruı'z<sup>c</sup>

<sup>a</sup>Department of Chemistry, Panjab University, Chandigarh 160014, India

<sup>b</sup>School of Advanced Chemical Sciences, Shoolini University, Solan, Himachal Pradesh, India

<sup>c</sup>Department of Cell Biology & Histology, Faculty of Biology, University of Murcia, 30100

Murcia, Spain

\*Corresponding Authors

1. Prof. Gurjaspreet Singh

Department of Chemistry & Centre of Advanced Studies

Panjab University, Chandigarh, India

Email: gjpsingh@pu.ac.in

Tel. No: 0172-2534428, 09814302099, 9317502099

Fax No: 0172-2545074

2. Prof. K.N. Singh

Professor,

Department of Chemistry, Panjab University, Chandigarh, India

Email: kns1947@gmail.com

3. Marí a Angeles Esteban

Full professor

Department of Cell Biology & Histology, Faculty of Biology, University of Murcia, 30100

Murcia, Spain

+34 868887665

E-mail: aesteban@um.es

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Fig.S1: <sup>1</sup>H NMR spectrum of compound 2a



**Fig.S2:** <sup>1</sup>H NMR spectrum of compound 3a



Fig.S3: <sup>1</sup>H NMR spectrum of compound 3b



**Fig.S4:** <sup>1</sup>H NMR spectrum of compound 3c



Fig.S5: <sup>13</sup>C NMR spectrum of compound 2a



Fig.S6: <sup>13</sup>C NMR spectrum of compound 3a



**Fig.S7:** <sup>13</sup>C NMR spectrum of compound 3b



**Fig.S8:** <sup>13</sup>C NMR spectrum of compound 3c



Fig.S9: Mass spectrum of compound 2a



Fig.S10: Mass spectrum of compound 3a



Fig.S11: Mass spectrum of compound 3b







Fig. S13: FT-IR spectra of silica nanoparticles (SiO<sub>2</sub>) and V-NPs



Fig. S14: DTA curves of silica nanoparticles (SiO<sub>2</sub>), 3a and V-NPs



**Fig. S15:** UV-Visible spectra of 3a and V-NPs in methanol  $(10^{-6} \text{ M})$ 



Fig. S16: The absorption intensities of 3a and V-NPs as functions of pH values.



**Fig. S17:** Job's plots for the complexation of 3a and V-NPs with Cu<sup>2+</sup> and Fe<sup>3+</sup>ions in methanol showing 1:1 stoichiometry



Fig. S18: B-H plots for the compounds 3a and V-NPs with Cu<sup>2+</sup> and Fe<sup>3+</sup> ions at 269 nm



Fig. S19: LOD plots of 3a and V-NPs for  $Cu^{2+}$  and  $Fe^{3+}ions$  at 269 nm



Fig. S20: Response time studies of 3a and V-NPs in the presence of  $Cu^{2+}$  and  $Fe^{3+}$  ions (50  $\mu$ M)



Fig. S21: Stern-Volmer plots for the compounds 3a and V-NPs at 527 nm



**Fig. S22:** FT-IR spectra of 3a,  $3a+Cu^{2+}$  and  $3a+Fe^{3+}$