

## Supporting Information file

### Adaptable sensor for paying fluorometric detection of methanol molecules: theoretical aspects and DNA binding studies

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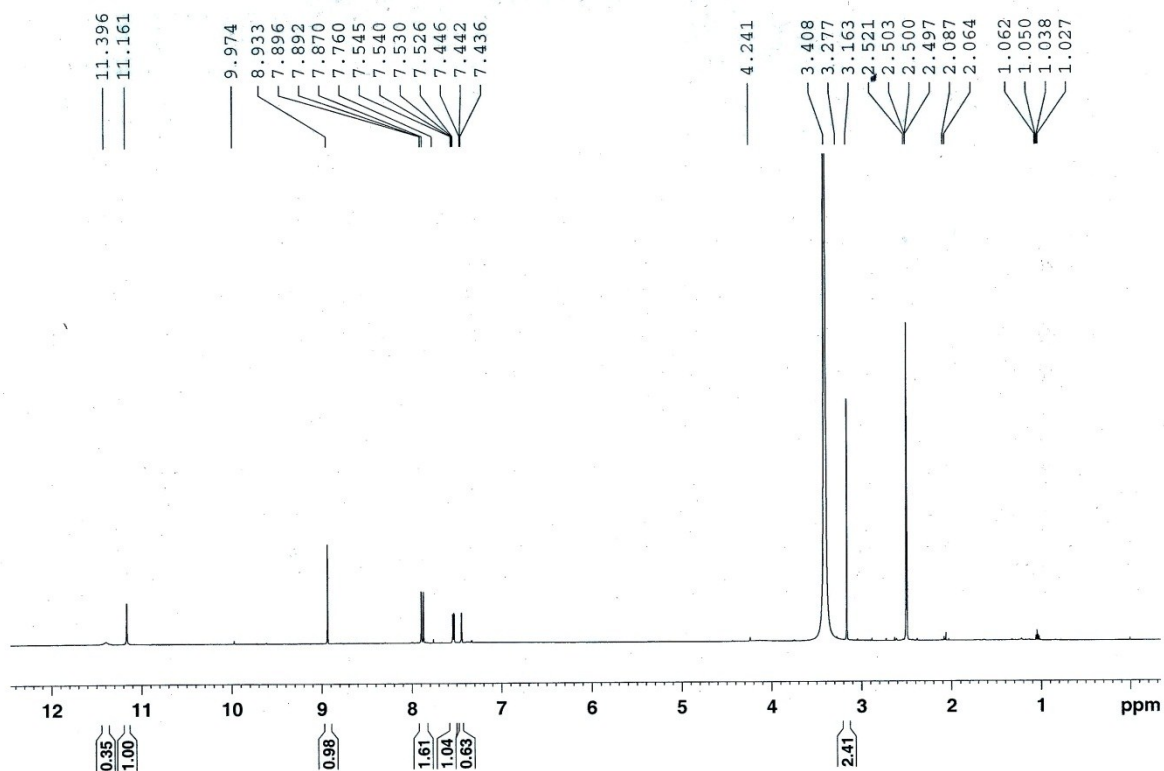


Fig.S1: <sup>1</sup>H-NMR spectra of ligand NO<sub>2</sub>-H<sub>2</sub>SALNN

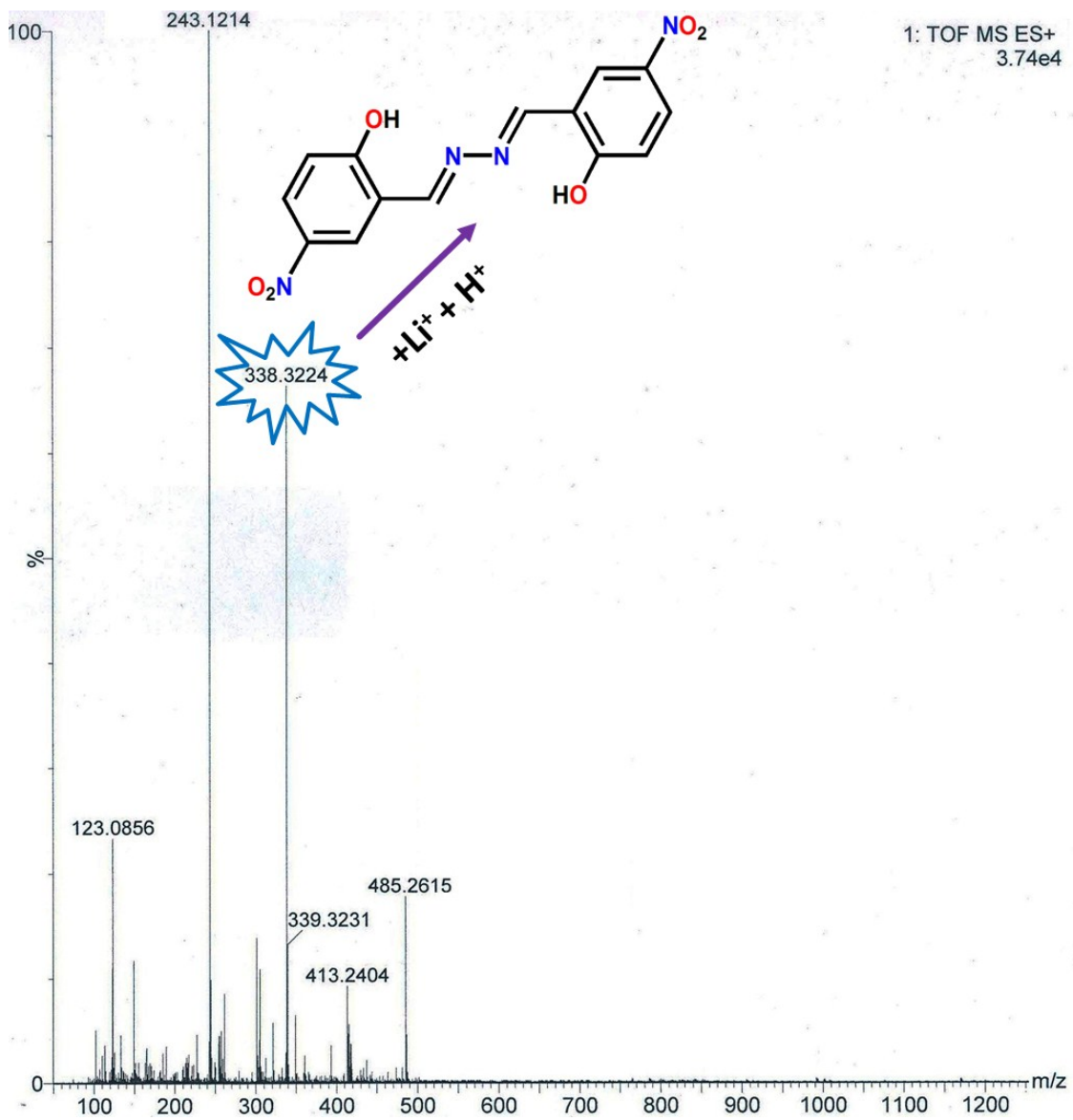


Fig.S2: ESI-MS spectra of ligand NO<sub>2</sub>-H<sub>2</sub>SALNN

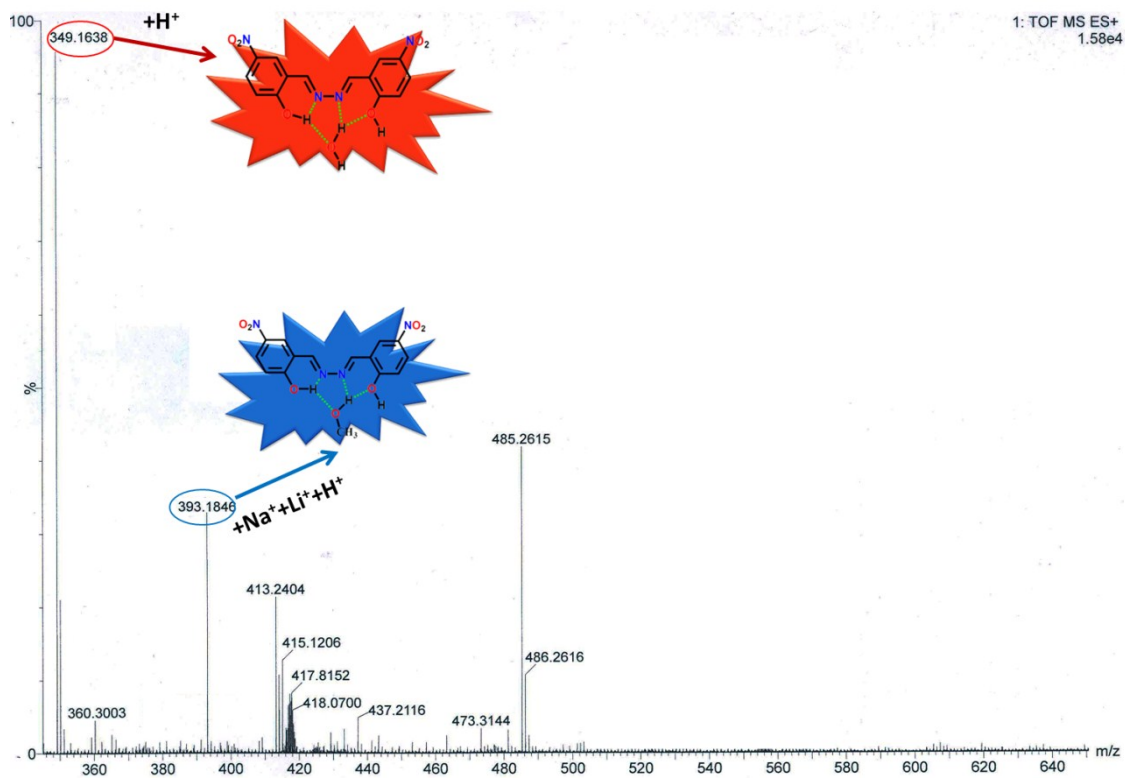


Fig.S3: ESI-MS spectra of  $[(NO_2-H_2SALNN \cdots H_2O)+H^+]$  and  $[(NO_2-H_2SALNN \cdots MeOH)]+Na^++Li^++H^+$ .

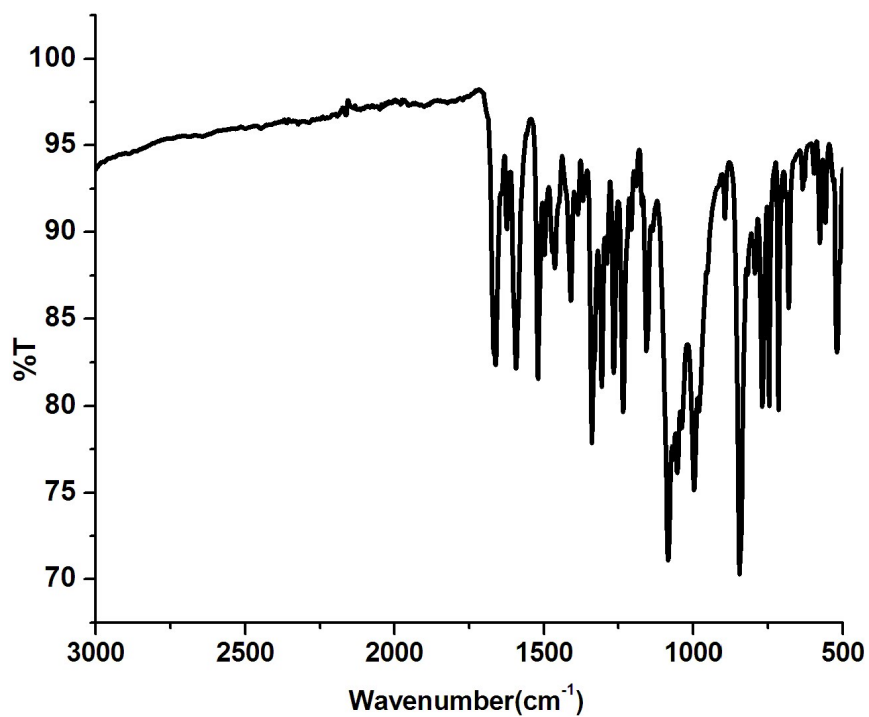


Fig.S4: Infra-red(IR) spectra of ligand

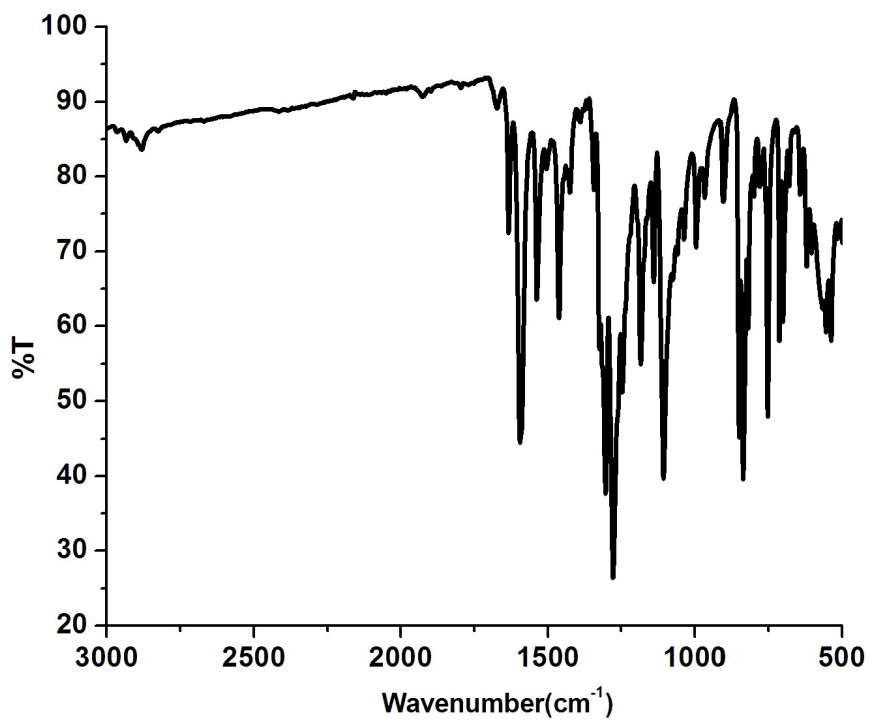


Fig.S5: Infra-red(IR) spectra of complex-1

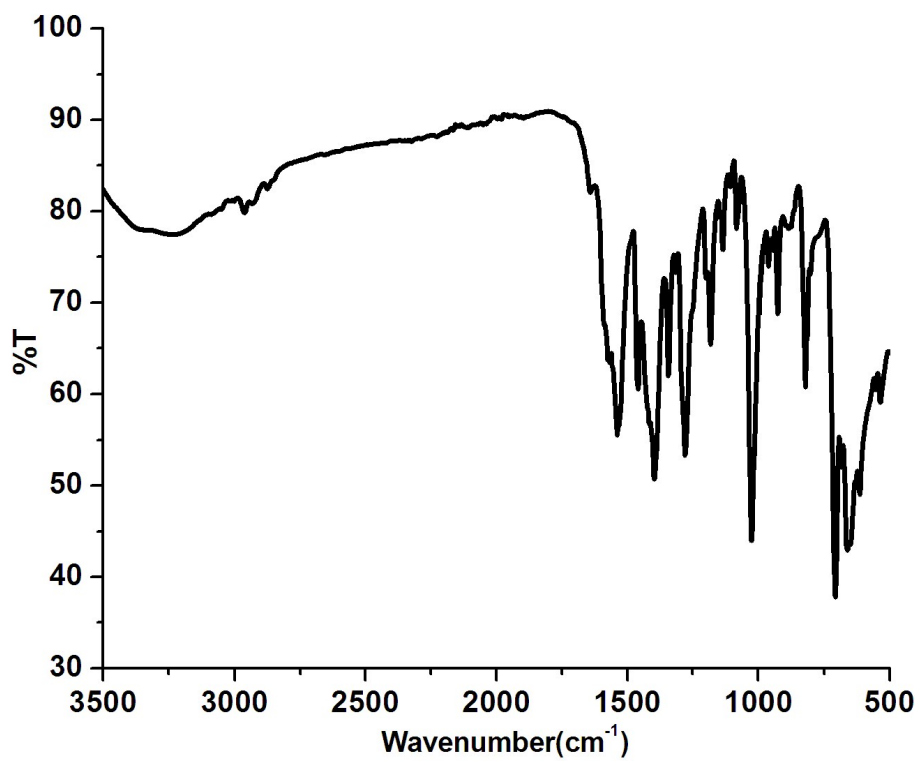


Fig.S6: Infra-red(IR) spectra of complex-2.

## Hydrodynamic studies

Hydrodynamic studies were carried out to check the binding mode of **NO<sub>2</sub>-H<sub>2</sub>SALNN** with DNA. The viscosity of a rod-like DNA enhances upon intercalation of planar ligands to accommodate the stacked molecules between the base pairs. This leads to an increase in the helix contour length of the DNA. Very minor alterations in relative viscosity may occur for ligands binding to the grooves of DNA also. To prove the mode of binding, the viscosity of DNA in the presence and absence of **NO<sub>2</sub>-H<sub>2</sub>SALNN** was measured in terms of flow time, which was obtained as an average of three readings. For viscosity measurement sonicated DNA (of  $280 \pm 40$  base pairs) was used. Viscometric measurements were performed using a Cannon–Manning semi micro dilution viscometer immersed vertically in a constant temperature water bath at  $25 \pm 0.5$  °C. Flow times of DNA alone and DNA with different ratio of the **NO<sub>2</sub>-H<sub>2</sub>SALNN** were measured in triplicate with an accuracy of  $\pm 0.01$  s using a Casio electronic stop watch and the relative specific viscosity was calculated using the equation (1),

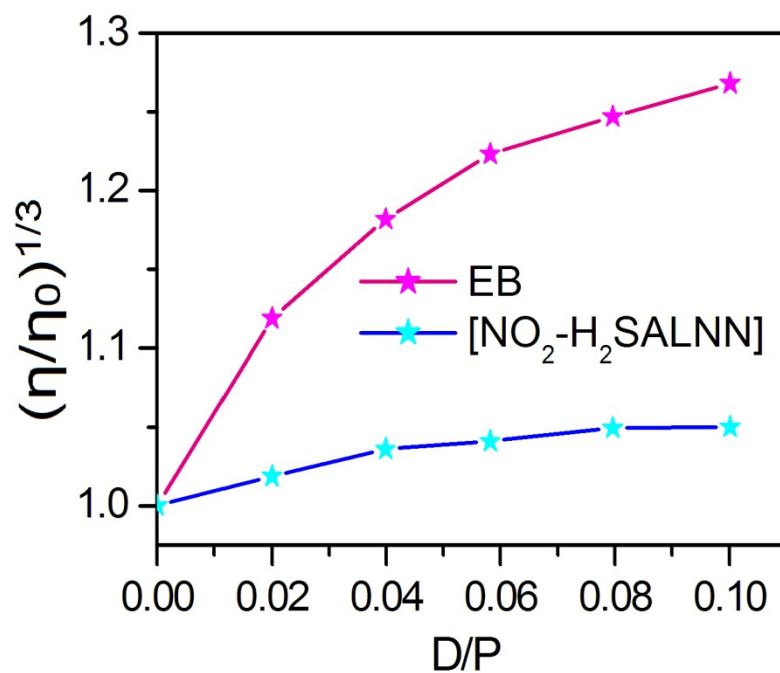
$$\frac{\eta'_{sp}}{\eta_{sp}} = \frac{\frac{(t_{complex} - t_0)}{t_0}}{\frac{(t_{control} - t_0)}{t_0}} \quad (1)$$

where  $\eta'_{sp}$  and  $\eta_{sp}$  are the specific viscosities of DNA in the presence and absence of the complexes,  $t_{control}$  are the average efflux times of complex and DNA and  $t_0$  is the same for the buffer. The relative increase in helix contour length of DNA,  $L/L_0$ , is obtained from a corresponding increase in the relative viscosity using the following equation (2)

$$\frac{L}{L_0} = \left(\frac{\eta}{\eta_0}\right)^{1/3} = 1 + \beta r \quad (2)$$

where,  $L$  and  $L_0$  are the contour lengths of DNA in the presence and in the absence of the complex,  $\eta$  and  $\eta_0$  are the corresponding values of intrinsic viscosity (approximated by the reduced viscosity

$\eta = \frac{\eta_{sp}}{C}$  ) where  $C$  is the concentration of DNA and  $\beta$  is the slope of the plot of  $L/L_0$  versus  $r$ .



**Fig.S7.** A plot of relative specific viscosity of CT DNA with increasing concentration of [NO<sub>2</sub>-H<sub>2</sub>SALNN] and Ethidium Bromide (EB). Each experimental point is average of three determinations. The DNA concentration was 100  $\mu$ M. D/P= 0.6.