Electronic Supplementary Information

Fluorescent Detection of an Anthrax Biomarker Based on PVA Film

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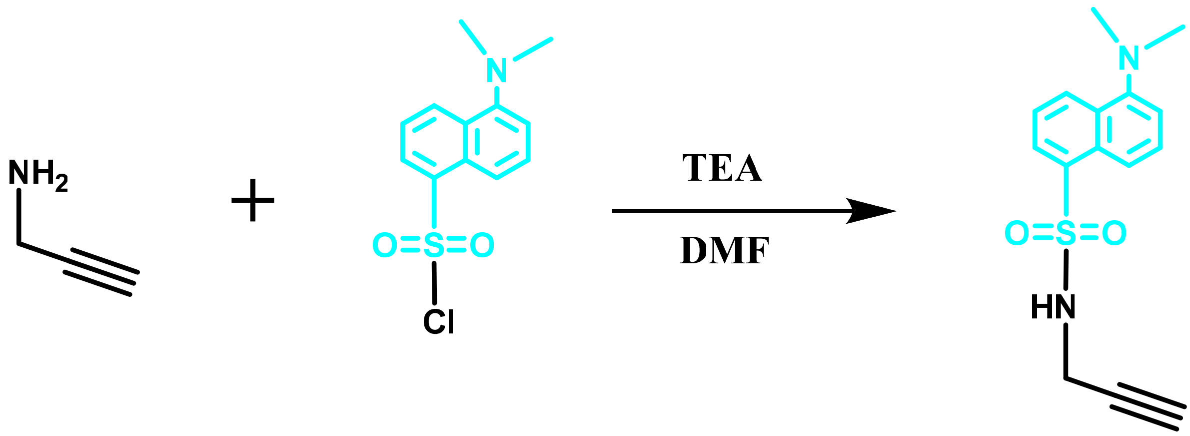


Scheme S1 Synthetic route for DNS-propyne (reference dye).

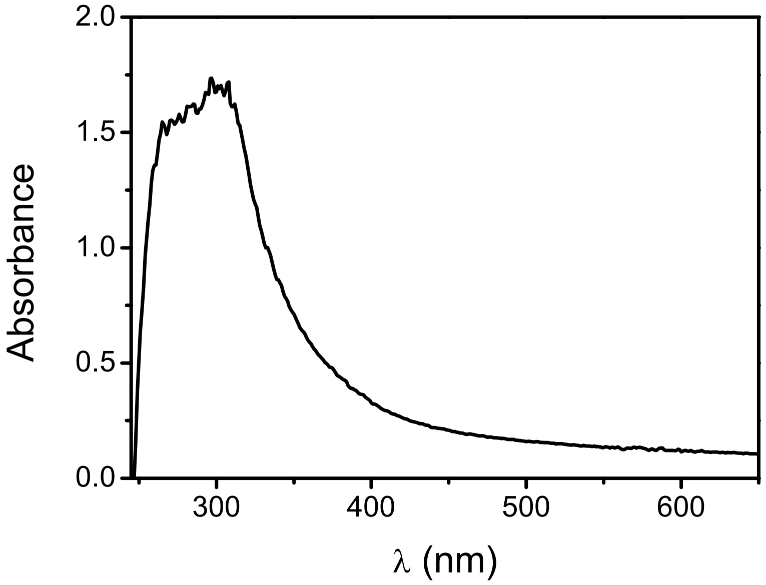


Fig. S1 Absorption spectrum of the PVA film chemosensor.

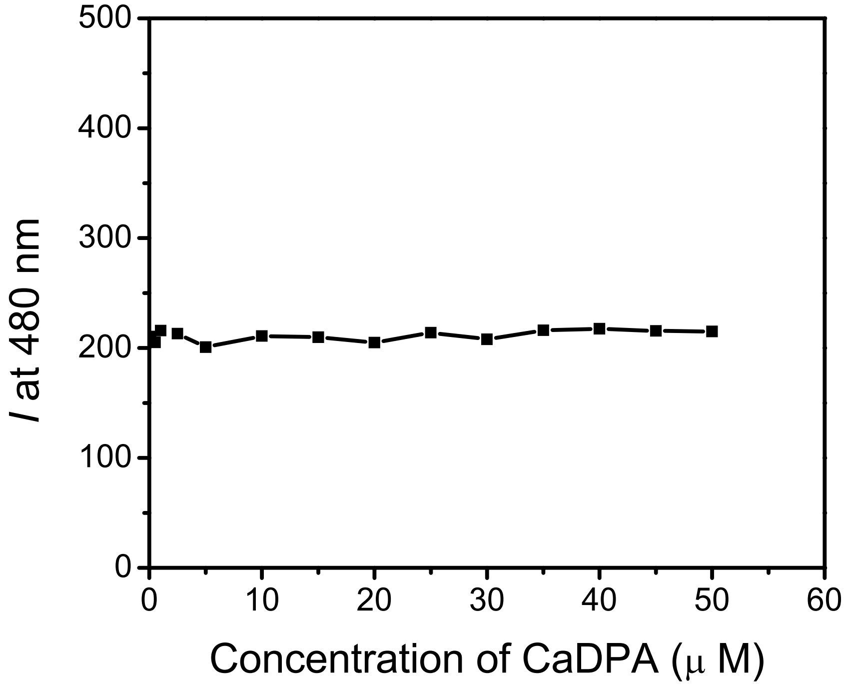


Fig. S2 Fluorescence intensity of DNS (Intensity at 480 nm, reference dye) on the PVA film chemosensor as the concentration of CaDPA was varied. (λ_{ex} = 270 nm)

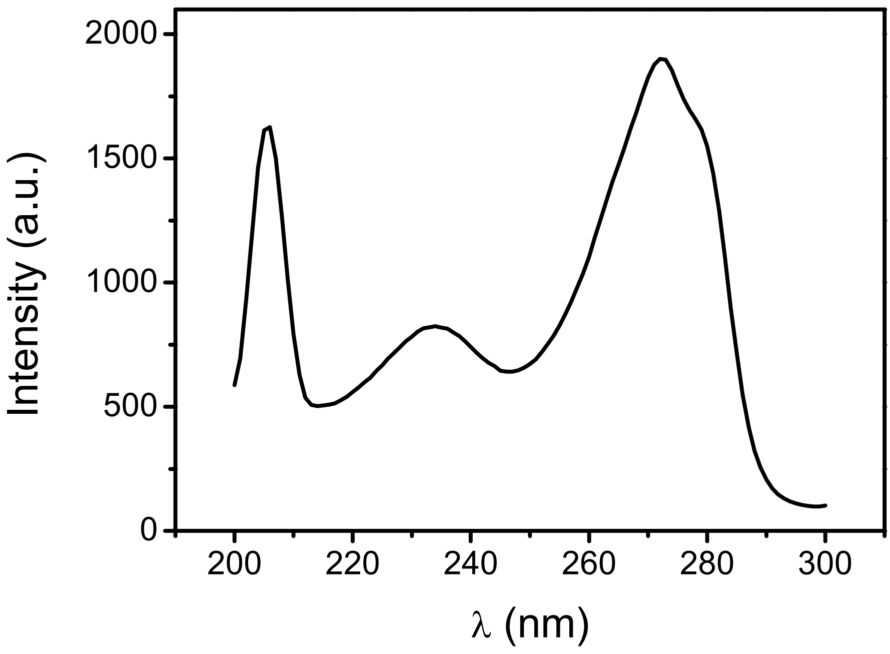


Fig. S3 Excitation spectrum of the PVA film chemosensor in the presence of CaDPA. (λ_{em} = 617 nm)

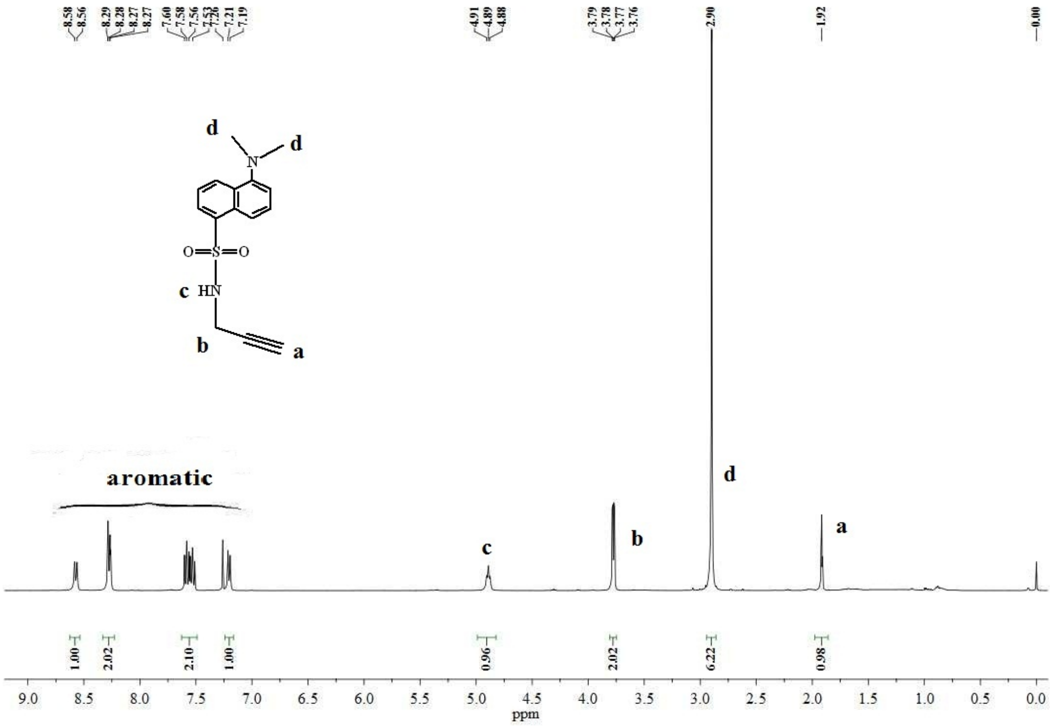
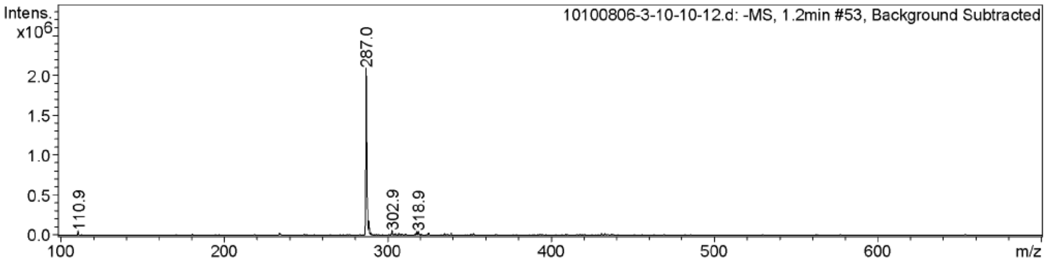


Fig. S4 ^{1}H NMR spectrum of DNS-propyne (in $CDCl_3$).



#	m/z	I	I %
1	110.9	52556	2.5
2	234.1	26537	1.3
3	287.0	2094999	100.0
4	288.8	179231	8.6
5	289.9	28642	1.4
6	302.9	57350	2.7
7	317.9	43602	2.1
8	318.9	46929	2.2
9	325.1	26356	1.3
10	339.1	26644	1.3

Fig. S5 Mass spectrum of DNS-propyne.
ESI: m/z 287.0. (M^-).

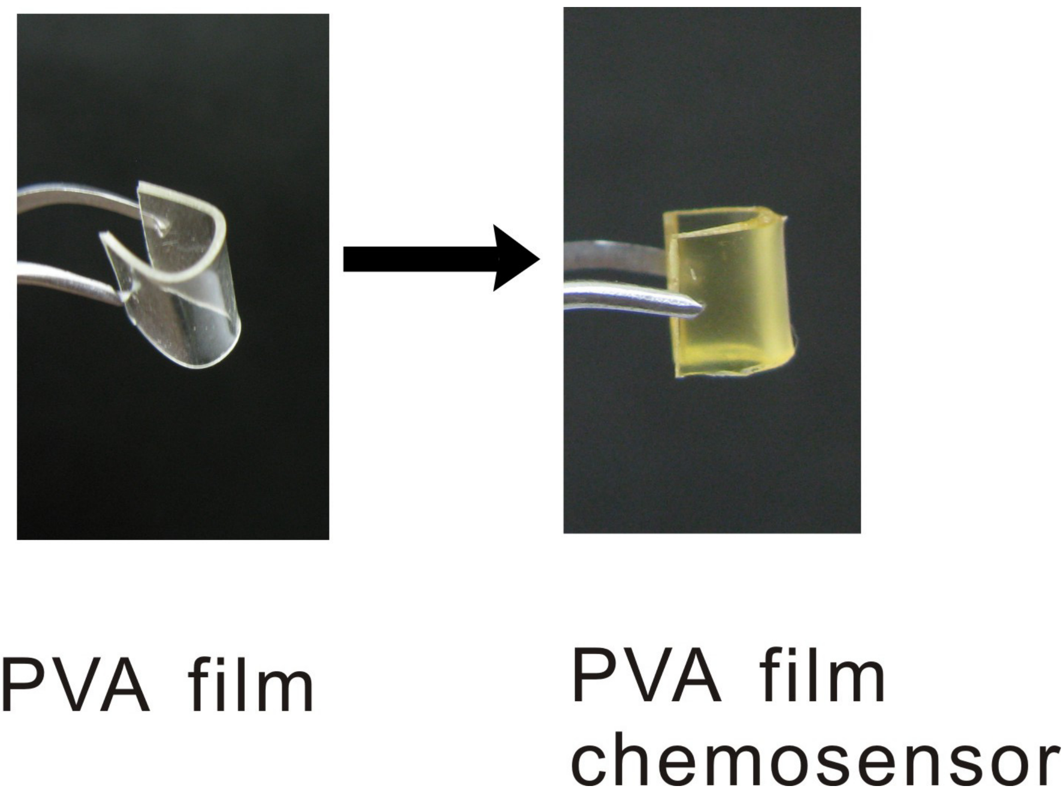


Fig. S6 Photographs for PVA film and the PVA film chemosensor. The film chemosensor maintains the flexibility of PVA film.

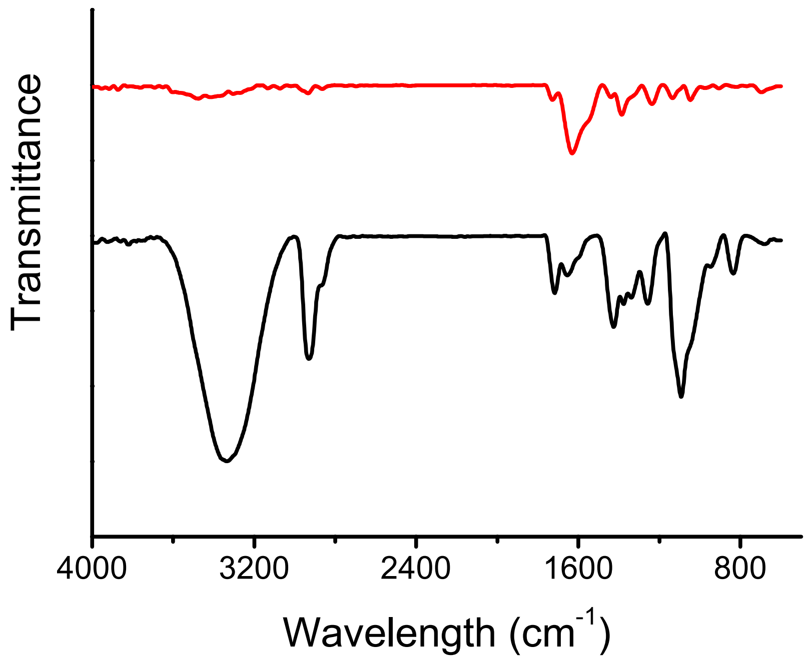


Fig. S7 FTIR spectra. Black curve: PVA film chemosensor; red curve: PVA film containing DNS and EDTA.

The symmetric stretching vibration frequencies of carboxylate group $\nu_s(COO^-)$ is 1385 cm^{-1} for PVA film containing DNS and EDTA, and 1377 cm^{-1} for the PVA film chemosensor. The frequencies of the carboxylate antisymmetric stretching vibration $\nu_{as}(COO^-)$ is 1627 cm^{-1} for PVA film containing DNS and EDTA, and 1660 cm^{-1} for the PVA film chemosensor. The difference between $\nu_{as}(COO^-)$ and $\nu_s(COO^-)$ vibration frequencies is higher in the case of Eu(III) complex, this confirms the bonding of EDTA to Eu(III) (for example: D. T. Sawyer, P. J. Paulsen, *J. Am. Chem. Soc.*, 1958, **80**, 1597–1600; D. T. Sawyer, P. J. Paulsen, *J. Am. Chem. Soc.*, 1959, **81**, 816–820; D. T. Sawyer, J. M. McKinnie, *J. Am. Chem. Soc.*, 1960, **82**, 4191–4196.)

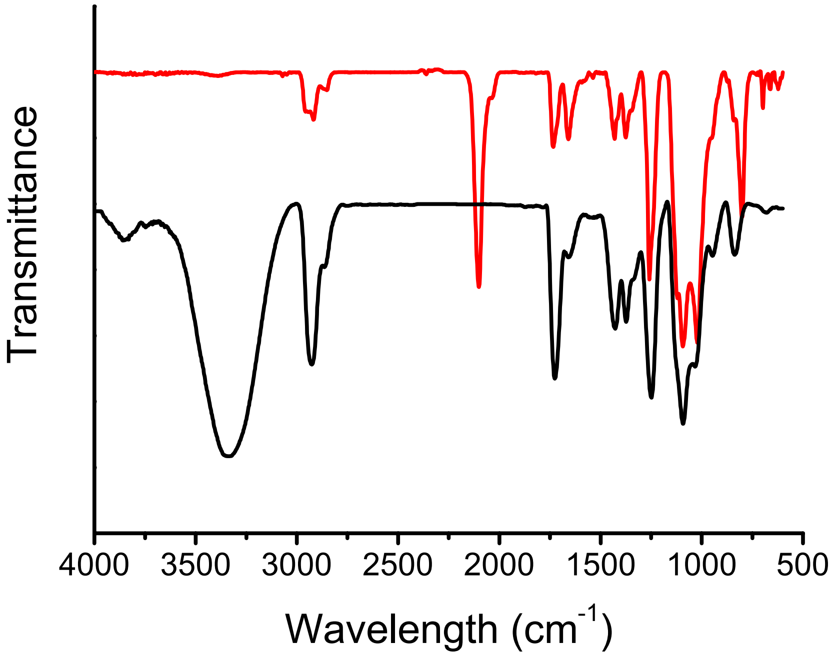


Fig. S8 FTIR spectra. Black curve: PVA film; red curve: PVA film with azide functionality.

The successful azidation was evidenced by the appearance of azide stretching band at 2103 cm^{-1}.