Supporting Information

Water-soluble Azobenzene-Dicyano Pendant Polymeric Chemosensor for the Colorimetric Detection of Cyanide in 100% Aqueous Media and Food Samples

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Materials

N,N´-dimethylacrylamide (DMA, TCI (Tokyo Chemical Industry)) was passed through alumina column (basic). 2,2′-Azobisisobutyronitrile (AIBN, Sigma Aldrich) was recrystallized before polymerization. 4-nitrobenzaldehyde, 4-dimethylamino pyridine (DMAP), 2-*(N*-methylanilino)ethanol, malononitrile (99%), 2-(Dodecylthiocarbonothioylthiol)-2-methylpropionic acid (DMP) were purchased from Sigma Aldrich and used as they were. *N*-(2-Hydroxyethyl)piperazine-*N*′-(2-ethanesulfonic acid) (HEPES), tetrabutylammonium salts of all anions were purchased from TCI with the highest purity. Solvents including hexanes, ethyl acetate, tetrahydrofuran (THF), dichloromethane (DCM), ethanol (EtOH), acetonitrile (ACN), methanol (MeOH), dimethyl sulfoxide (DMSO), and diethyl ether (Et$_2$O) were received from the local chemical suppliers. Cambridge Isotope Laboratories, Inc., USA were chosen to purchase the nuclear magnetic resonance spectroscopy (NMR) solvents: CDCl$_3$ (99.8% D) and DMSO-d_6 (99.8% D).

Instrumentation

The number averaged molecular weights (M_n) and molecular weight distributions (M_w/M_n) were measured by gel permeation chromatography (GPC, Agilent technologies 1200 series) using poly(methyl methacrylate) (PMMA) as the standard with DMF as the eluent at 30 ^{o}C and a flow rate of 1.00 mL/min. 1H NMR (1H nuclear magnetic resonance spectroscopy, Bruker Vance 300 MHz NMR) was carried out in various NMR solvents. Teramethylsilane (TMS) was used as an

internal standard and all chemical shifts are reported in the standard δ notation of parts per million (ppm). The UV-vis absorption spectra were recorded on Varian Cary 100 spectrometer.
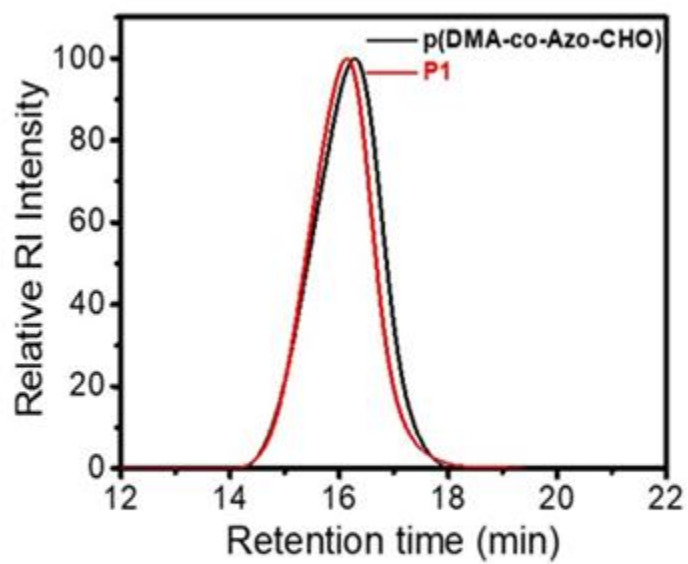

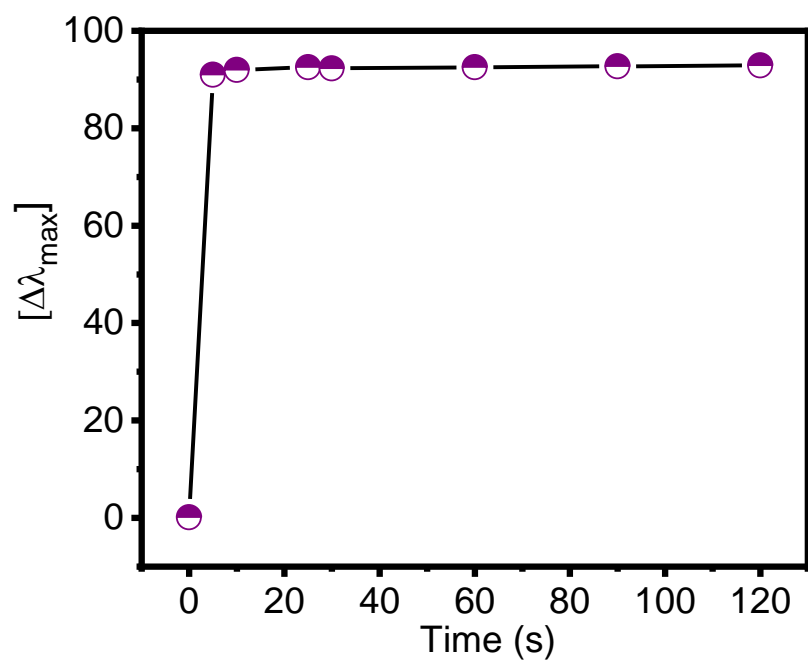**Fig. S1** GPC trace of p(DMA-*co*-Azo-aldehyde) and P1.

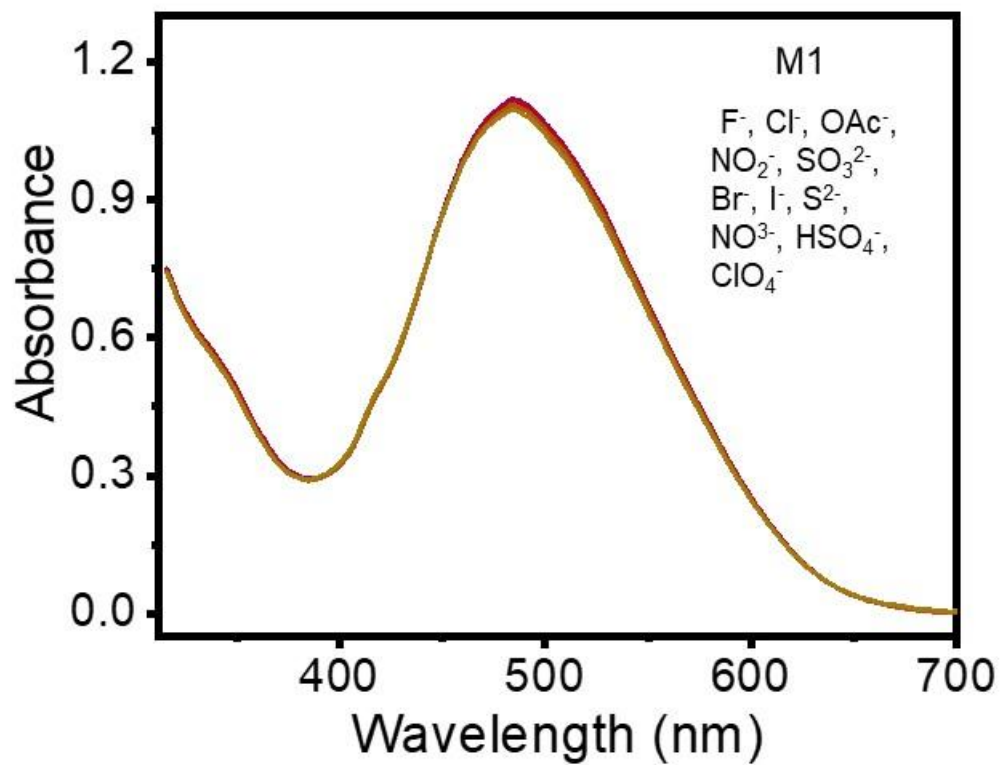**Fig. S2** Time dependency of M1 to detect CN⁻.

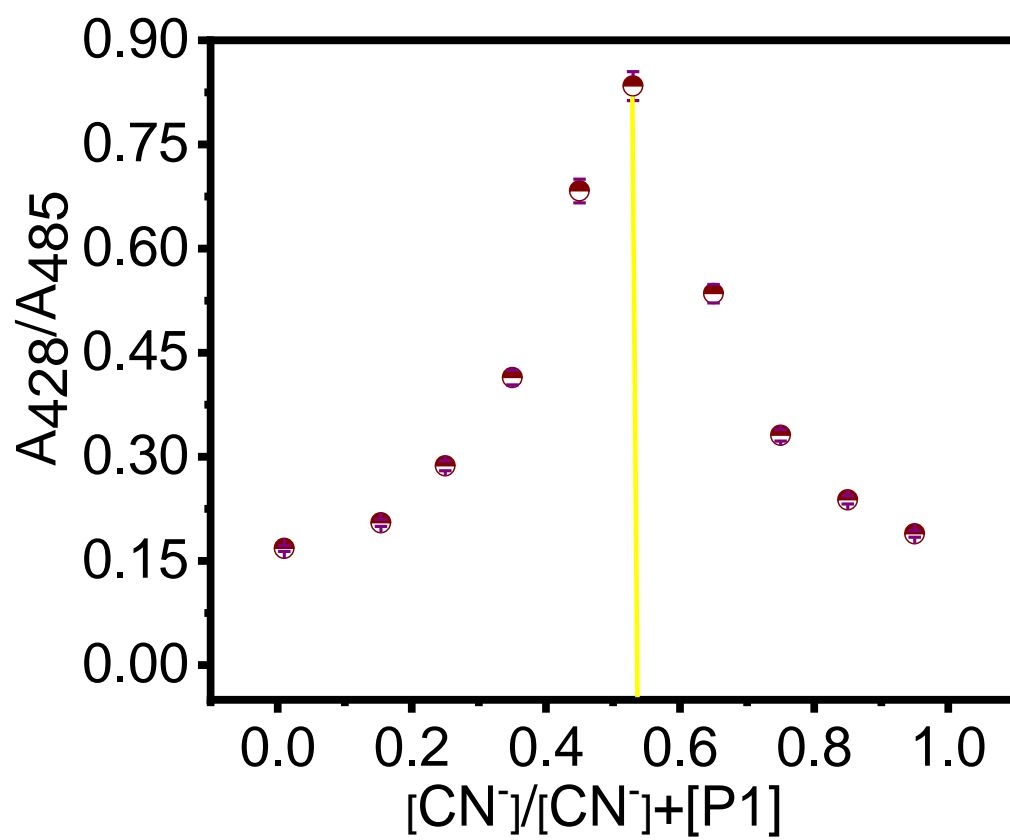**Fig. S3** UV-vis spectra of M1 in THF with various analytes.

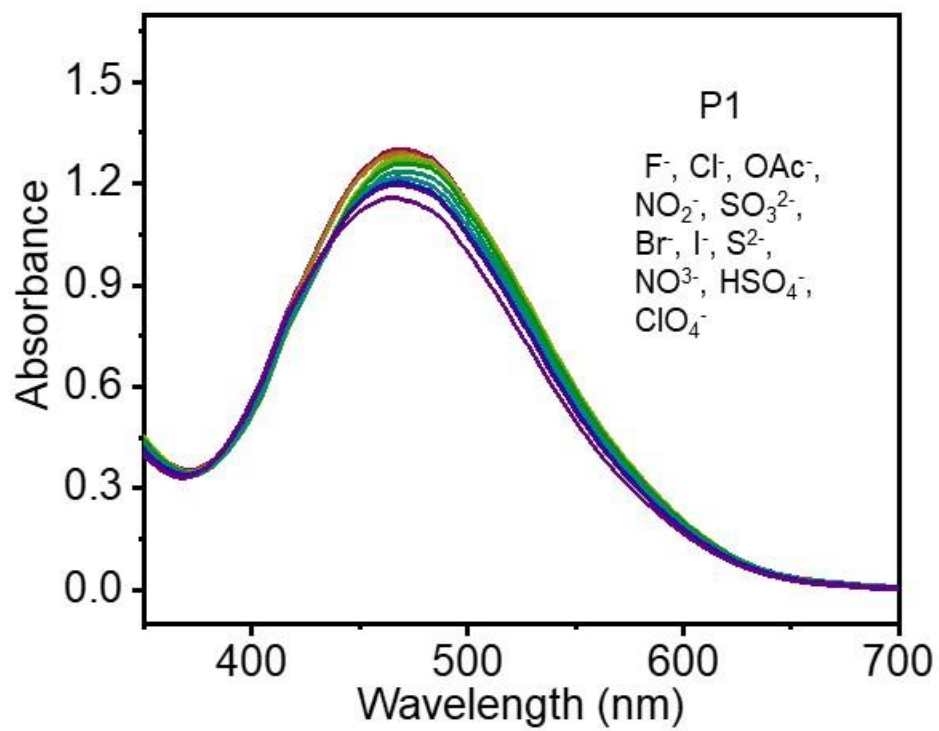**Fig. S4** Job's plot between P1 and CN⁻ in water at pH 7.4.

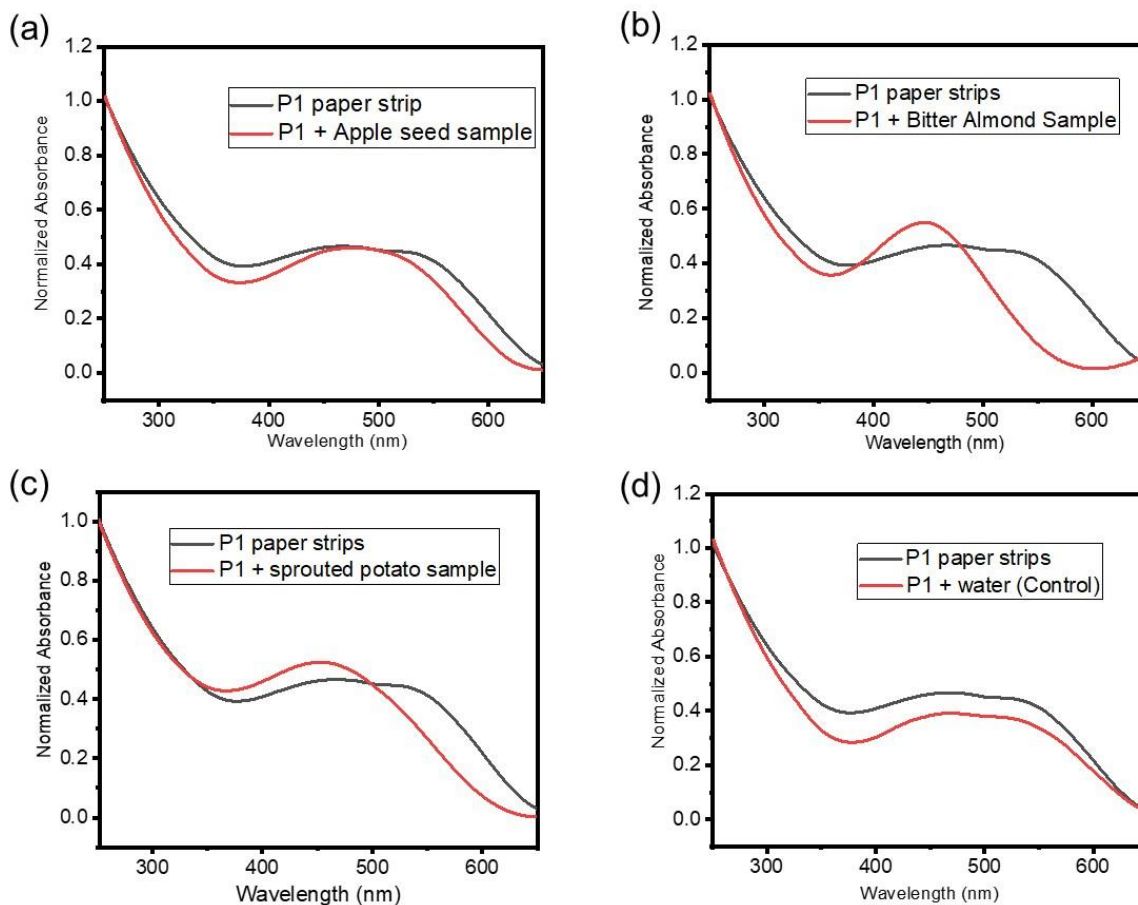**Fig. S5** UV-vis spectra of P1 in water with various analytes.

Fig. S6 Change in UV-vis spectra of P1 paper strips with various food samples (a) Apple seed (b) Bitter Almond (c) Sprouted potato and (d) water (control).