Electronic Supplemental Information for

## Photochromic dye doped polymeric Mach-Zehnder interferometer for UV light detection



Figure S1 color change of DAECHO in  $CH_2Cl_2$ ; (a) pristine color of DAECHO solution; (b) color change after UV light @365 nm irradiation; (c) color fade after visible light irradiation (by LED); (d) color change again after UV light irradiation. The power density of UV Light is about 20  $\mu$ w/cm<sup>2</sup>.



Figure S2 Color change of guest-host polymer films (20 wt% DAECHO and 80 wt% PMMAco-PS); (a) initial color; (b) after UV light irradiation @365nm; (c) after visible light irradiation by LED; (d) after UV light irradiation @365nm again. The power density of UV Light is about 20 μw/cm<sup>2</sup>.



Figure S3. The interference spectra drifted as the UV illumination time changed (10  $\mu$ w/cm<sup>2</sup>).



Figure S4. The interference spectra drifted as the UV illumination time changed  $(40\mu w/cm^2)$ 



Figure S5. The interference spectra drifted as the UV illumination time changed (70µw/cm<sup>2</sup>).



Figure S6. The interference spectra drifted as the UV illumination time changed (100  $\mu$ w/cm<sup>2</sup>).