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## Supplementary Materials of the Manuscript

# Supramolecular Assembly of Polythiophene-g-polymethacrylic acid Doped Polyaniline with Interesting Morphological and Opto-electronic Properties

Sandip Das, Dhruba P. Chatterjee‡ and Arun K. Nandi*

Polymer Science Unit, Indian Association for the Cultivation of Science,

Jadavpur, Kolkata-700 032, India

‡ Present address: Dept. of Chemistry, Presidency University, Kolkata-700 073.

* For Correspondence: Prof. Arun K. Nandi, E-mail: psuakn@iacs.res.in

**Table S1.** 'd' Spacing values of PTMA and different PTPA hybrids

| Sample Name | $d_{hkl}$ | | $d_{hkl}$ | | $d_{hkl}$ | | $d_{hkl}$ | | $d_{hkl}$ | | $d_{hkl}$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **2θ** | **d Å** | **2θ** | **d Å** | **2θ** | **d Å** | **2θ** | **d Å** | **2θ** | **d Å** | **2θ** | **d Å** |
| **PTMA** | | | | | 9.2 | 9.61 | 16.5 | 5.36 | | | | |
| **PTPA12** | 2.1 | 42.07 | 6.2 | 14.26 | | | 15.6 | 5.67 | 19.1 | 4.64 | 25.3 | 3.52 |
| **PTPA14** | 2.2 | 40.52 | 6.3 | 14.02 | | | 15.4 | 5.75 | 19.3 | 4.59 | 25.3 | 3.52 |
| **PTPA120** | 2.2 | 40.52 | 6.3 | 14.02 | | | 14.9 | 5.94 | 19.8 | 4.47 | 25.4 | 3.5 |
| **PTPA150** | 2.3 | 38.5 | 6.2 | 14.26 | | | | | 18.9 | 4.69 | 25.3 | 3.52 |

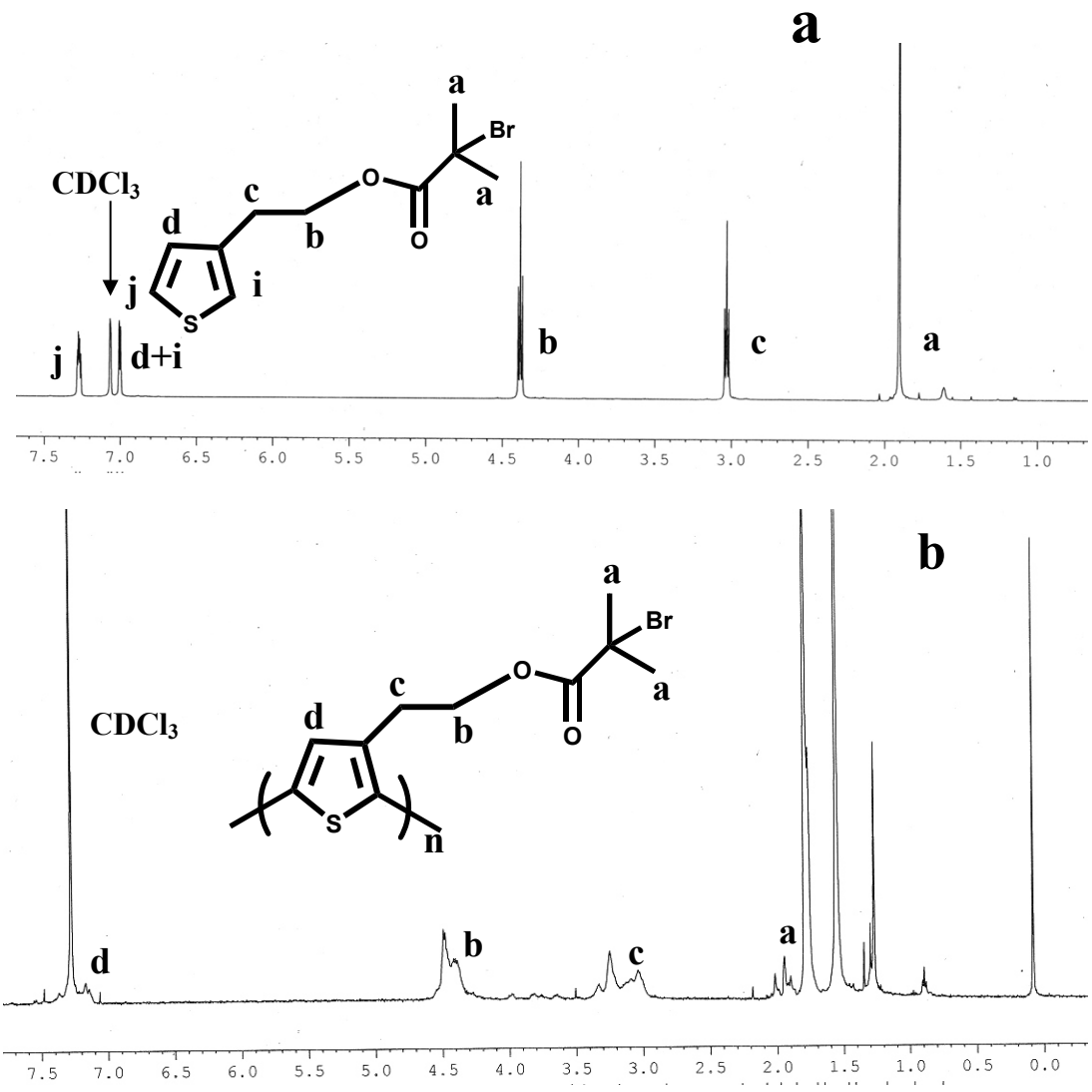


**Fig. S1.** $^{1}$H NMR spectra of (**a**) TI and (**b**) PTI in $CDCl_3$ solvent

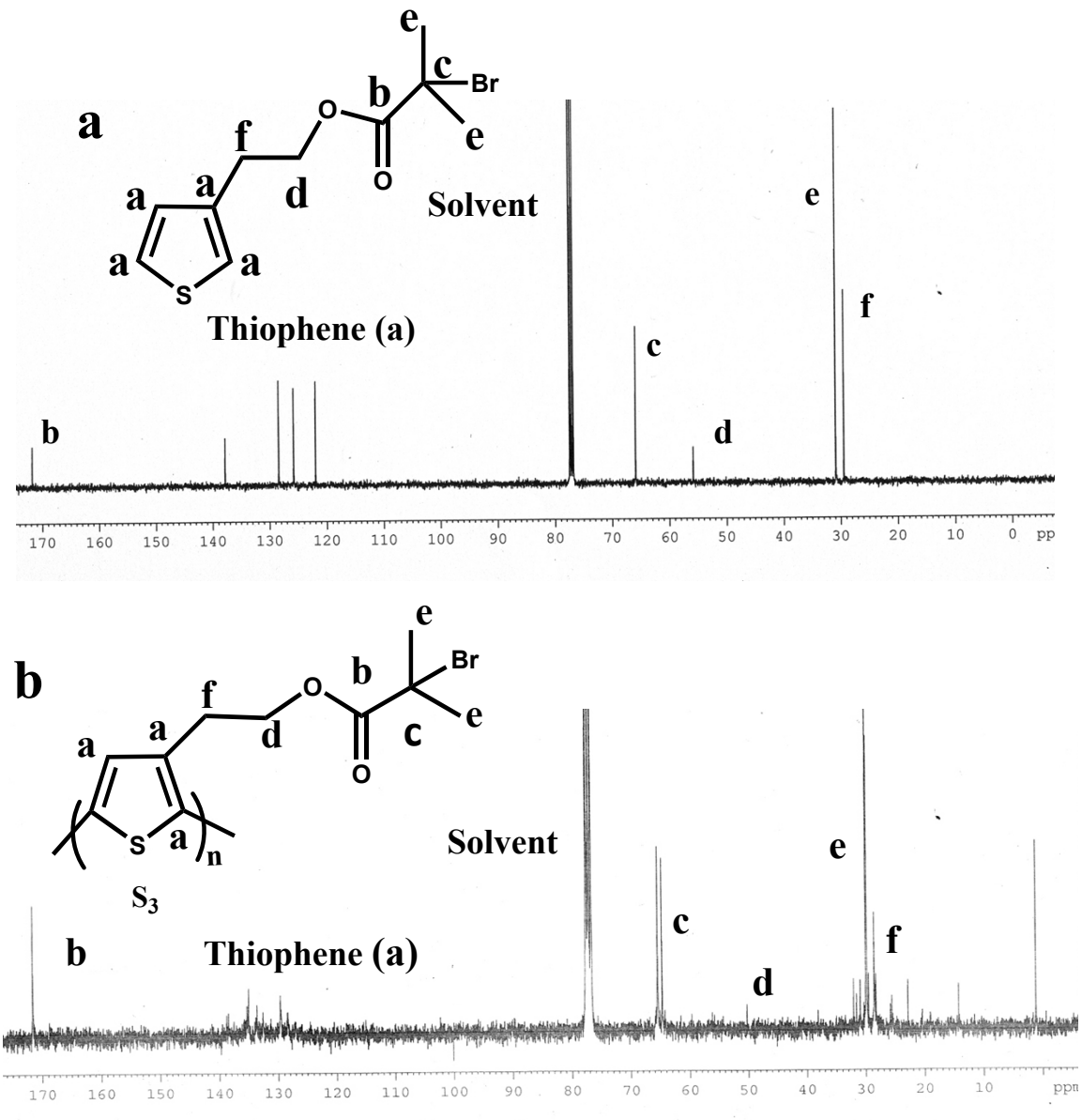


**Fig. S2.** $^{13}$**C** NMR spectra of (**a**) TI and (**b**) PTI in $CDCl_3$ along with their peak assignments.

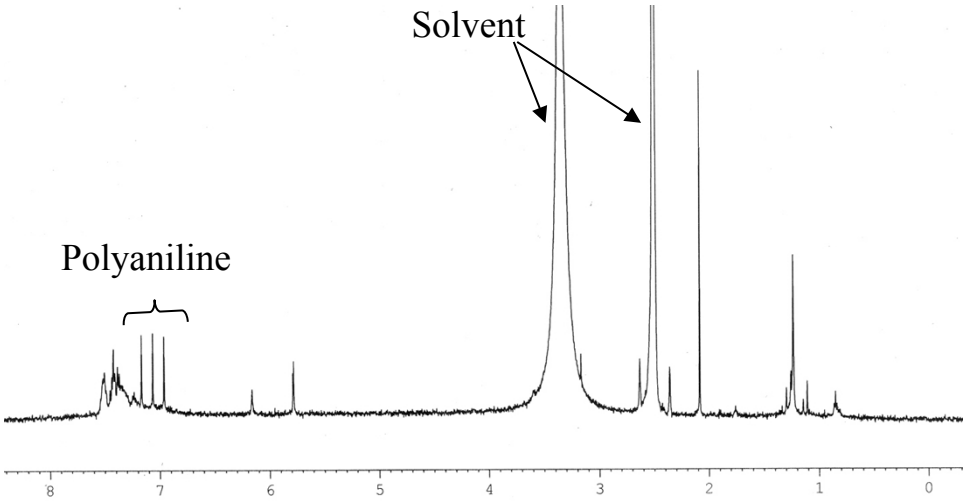


**Fig. S3.** $^{1}H$ NMR of PTPA12 sample in DMSO-$d^{6}$

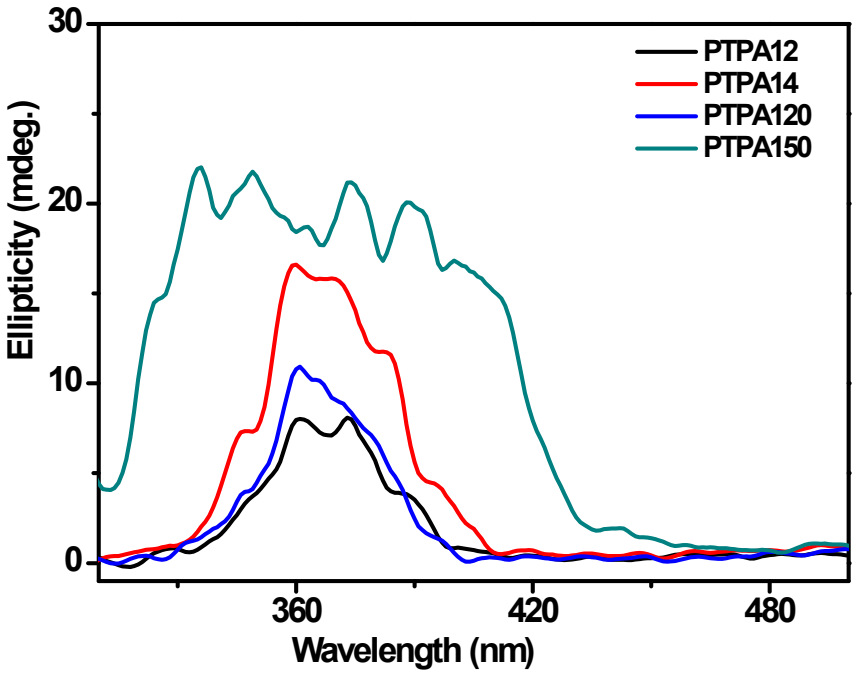


**Fig. S4.** CD spectra of PTPA12, PTPA14, PTPA120 and PTPA150 in THF

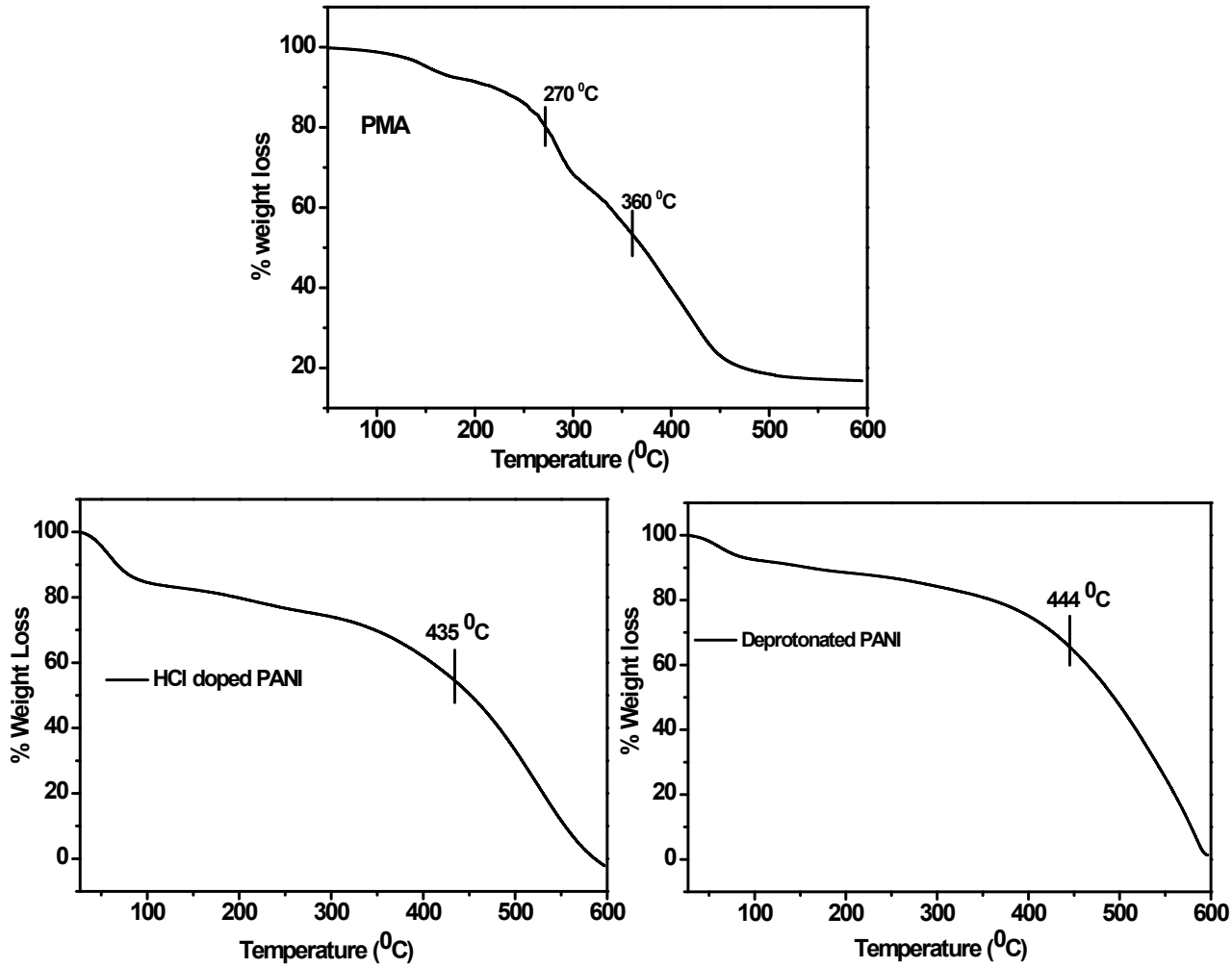


**Fig. S5.** TGA thermograms of PMA, HCl doped PANI and deprotonated PANI

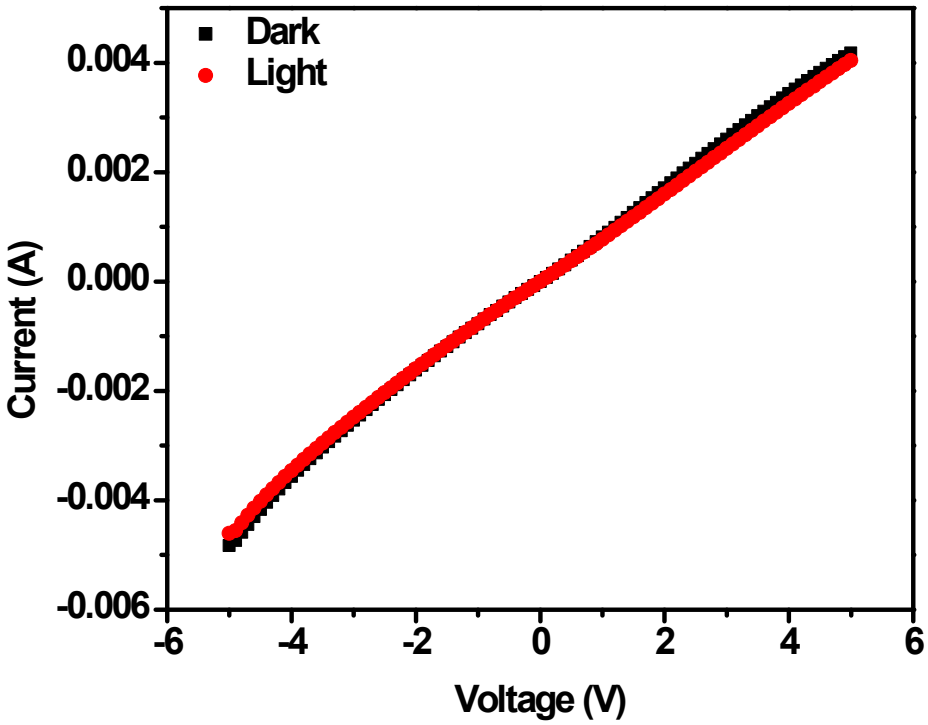


**Fig. S6.** Current –voltage (I-V) plot after and before white light irradiation of PMA doped PANI

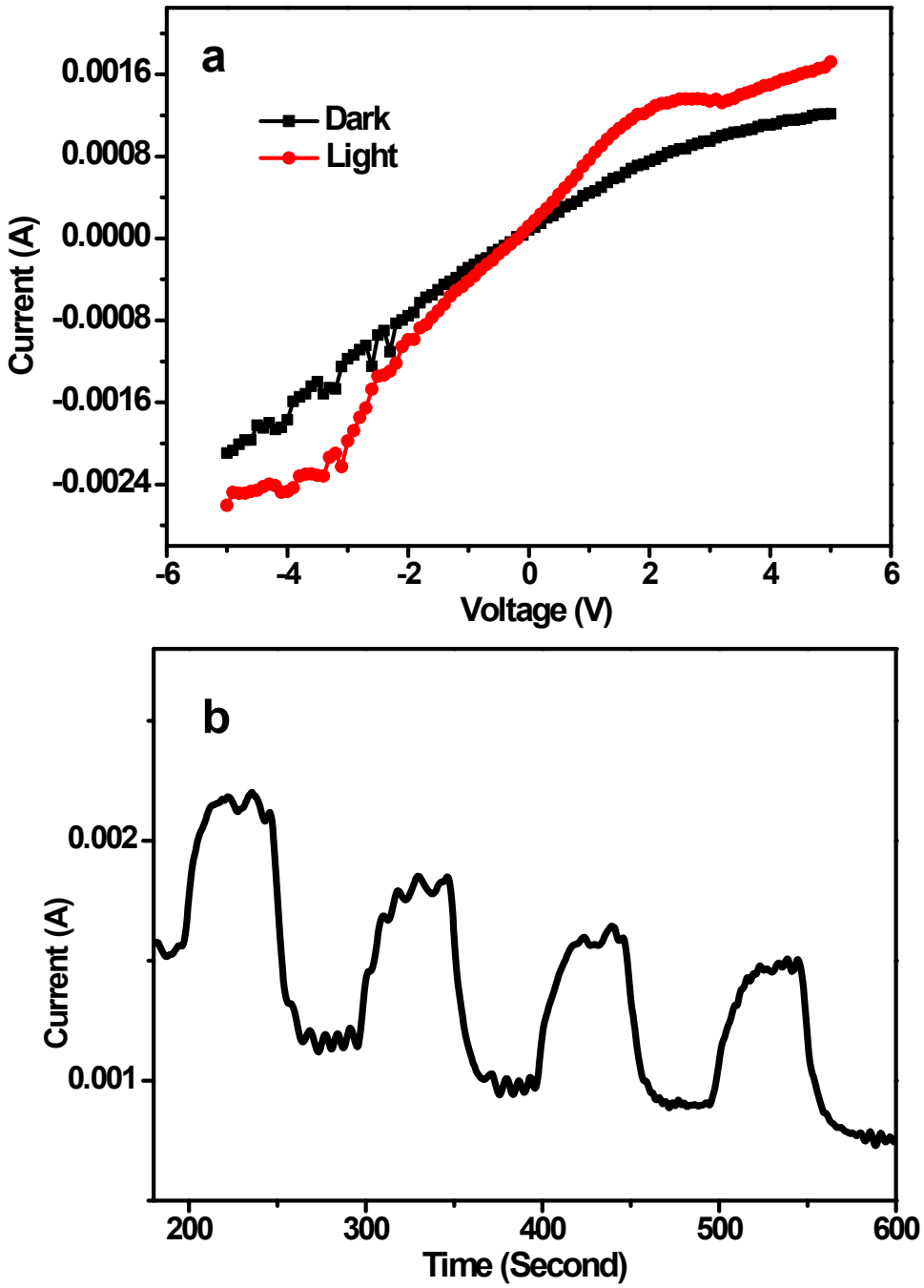


**Fig. S7(a)** Current –voltage (I-V) plot before and after white light irradiation of iodine doped PTPA12 hybrid **(b)** Photocurrent cycles show reversible turn ‘‘on’’ and turn ‘‘off’’ by switching the white light illumination on and off, respectively.