Supporting Information

Polymeric Microcapsules with Sustainable Core and Hierarchical Shell toward Superhydrophobicity and Sunlight-Induced Self-Healing Performance

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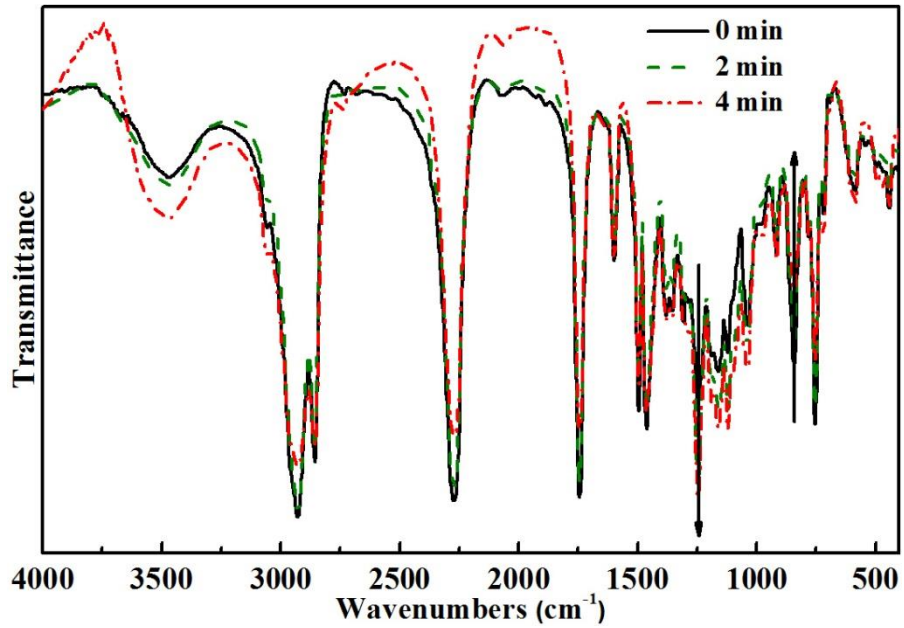

Figure S1. FTIR spectra of the core materials (ESO/CGE/HDI=6/3/1) after different sunlight exposure times in air.

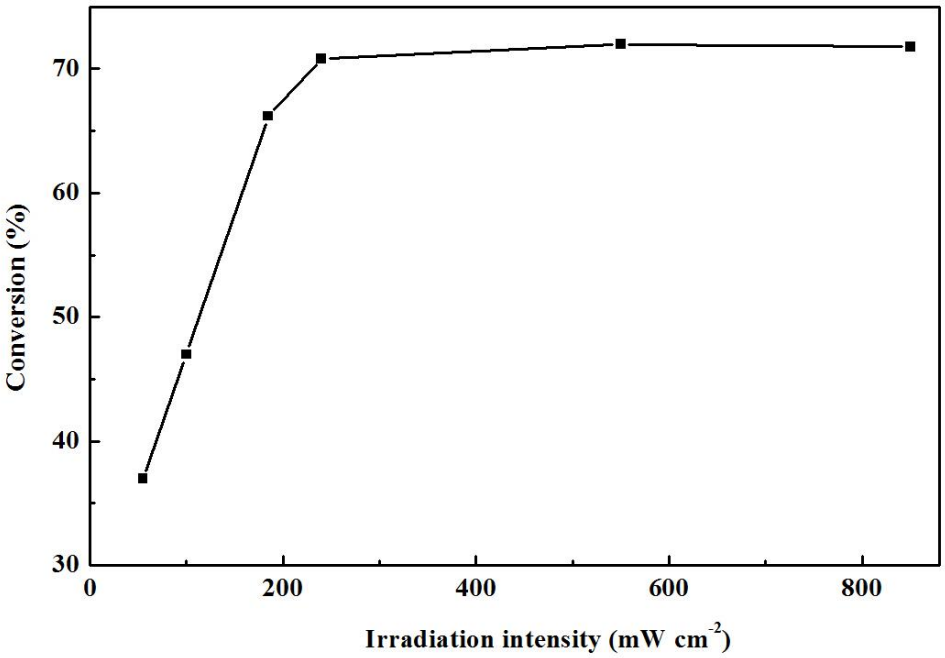

Figure S2. Curve of core materials conversion versus irradiation intensity of xenon lamp under a fixed irradiation time of 20 sec..

Table S1. The influence of light intensity on gel content (G) and degree of swelling (S) of photopolymerized products.

Light sources	Intensity (mW cm^{-2})	G (%)	S (%)
Sunlight	34.0-35.0	67.2	262.3
	6.7-7.3	62.2	264.1
	3.5-4.0	52.4	339.2
Xenon lamp	800.0	66.5	197.9
	350.0	62.7	219.2
	155.0	60.6	220.4

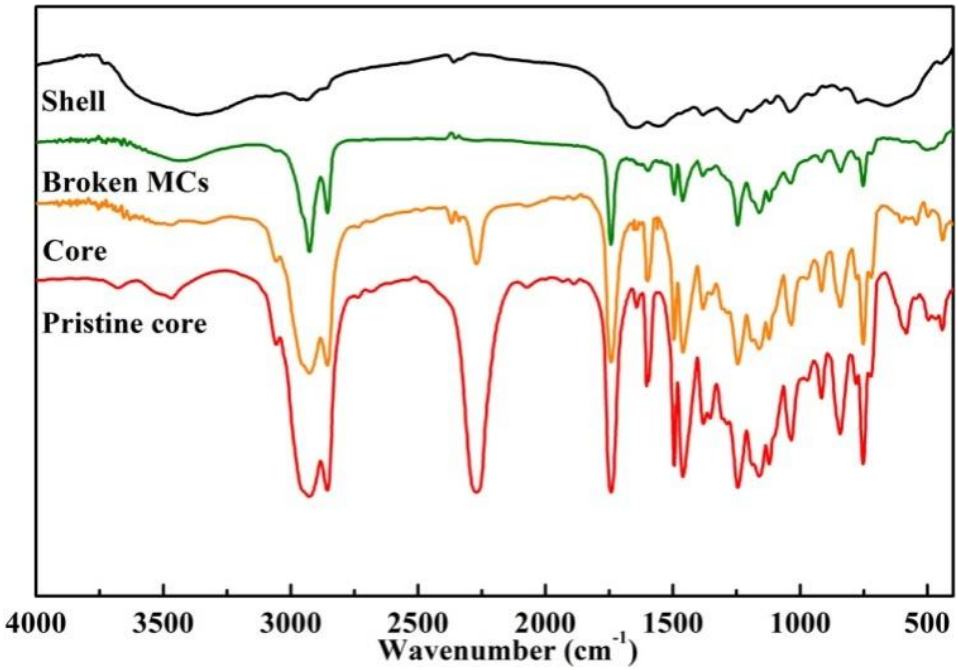

Figure S3. FTIR spectra of core, pristine core, broken microcapsules and shell.

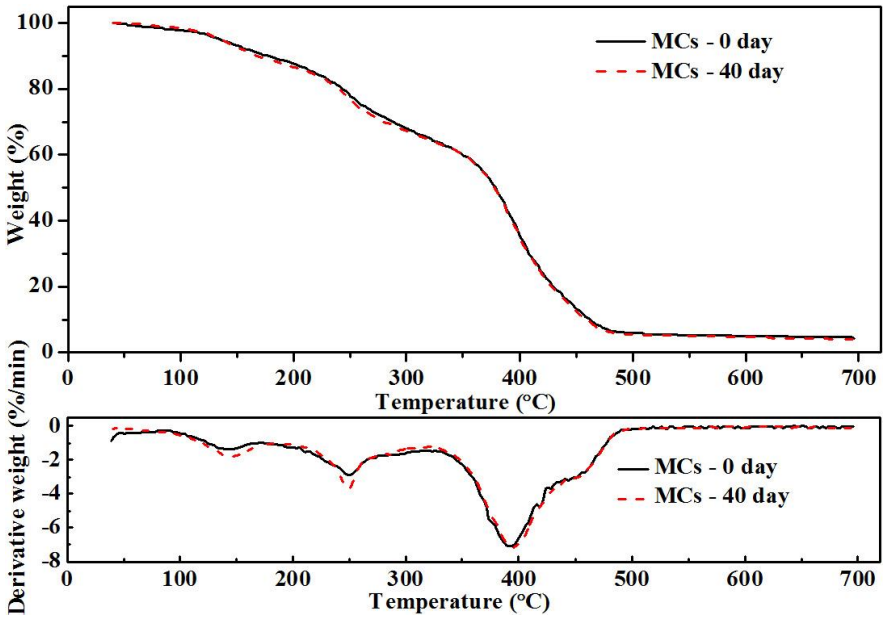

Figure S4. TGA curves of initial MCs (MCs-0 day) and MCs after 40 days storage (MCs-40 day).

Table S2. The influence of treating conditions on the core content of MCs-2.

Sample	Treating condition	Core content (%)
pristine MCs-2	ambient temperature/0 day	64.7
aging MCs-2	ambient temperature/6 months	63.6
Irradiated-MCs-2	xenon lamp irradiation/20 minutes	61.5
Water-soaked-MCs-2	water immersion/4 hours	62.9

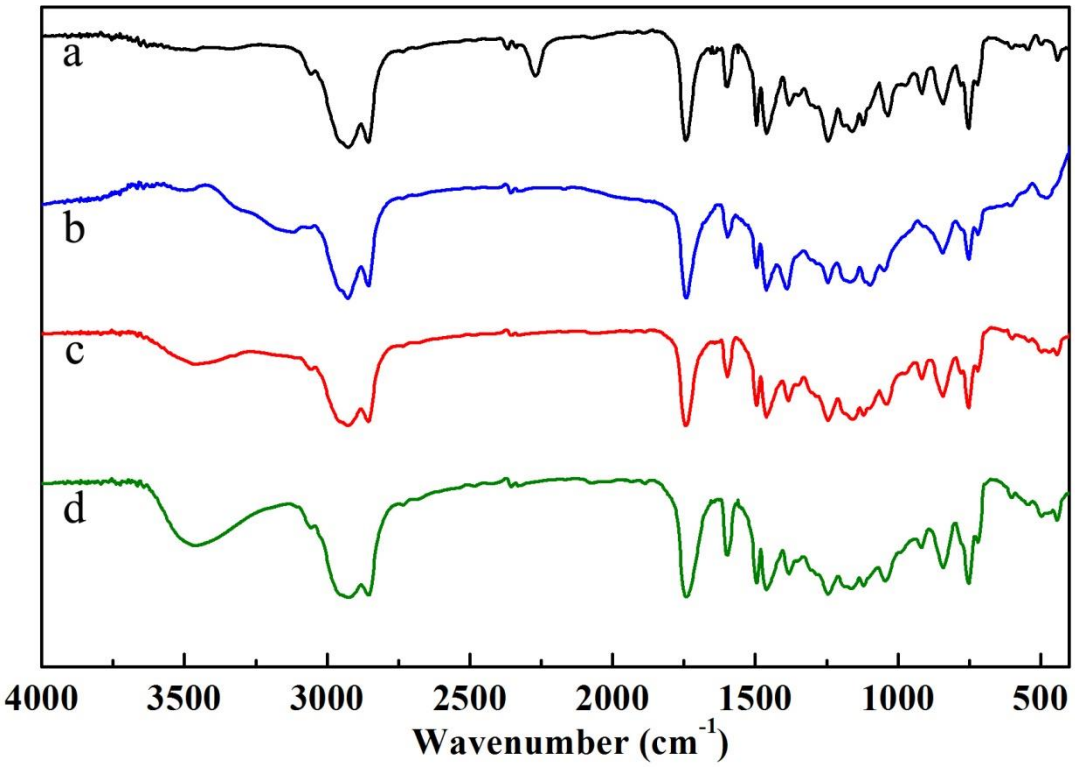

Figure S5. FTIR spectra of core materials of ruptured MCs that were (a) original state; (b) kept at ambient temperature for 6 months; (c) irradiated with a xenon lamp for 20 min; and (d) kept in water for 4 hours.

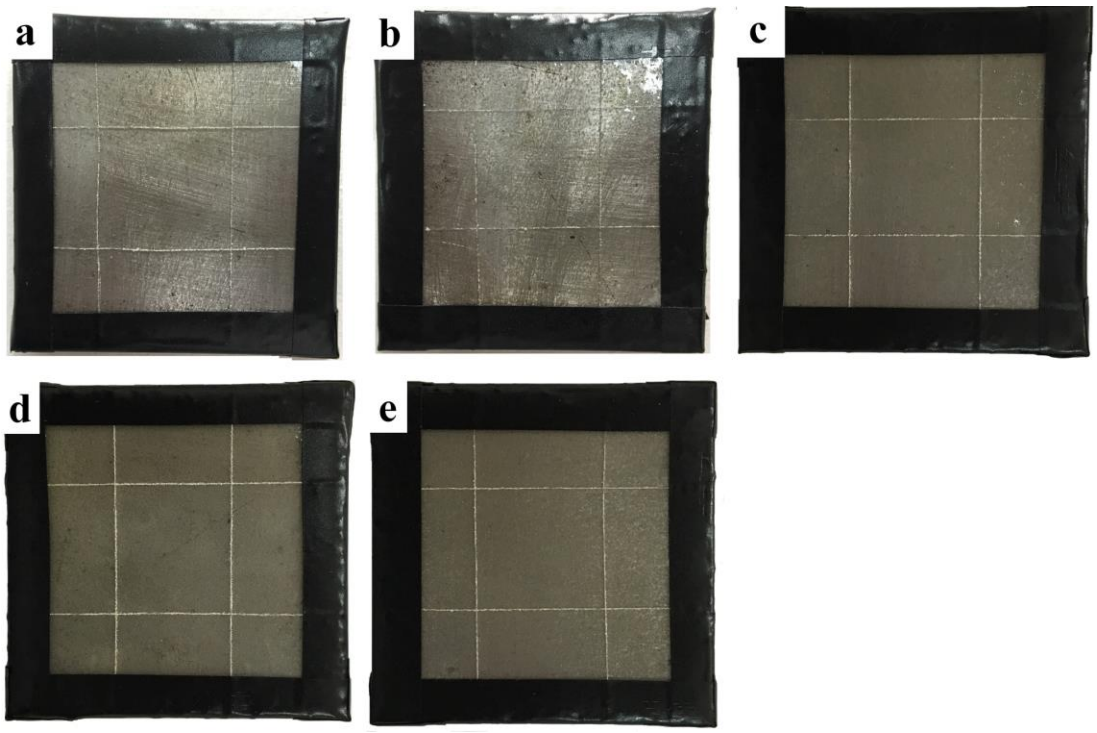

Figure S6. Photos of various coatings before immersion: (a) with 5 wt% of MCs-3, (b) with 10 wt% of MCs-3, (c) with 15 wt% of MCs-3, (d) with 15 wt% of MCs-1, and (e) with 15 wt% of MCs-2, respectively.

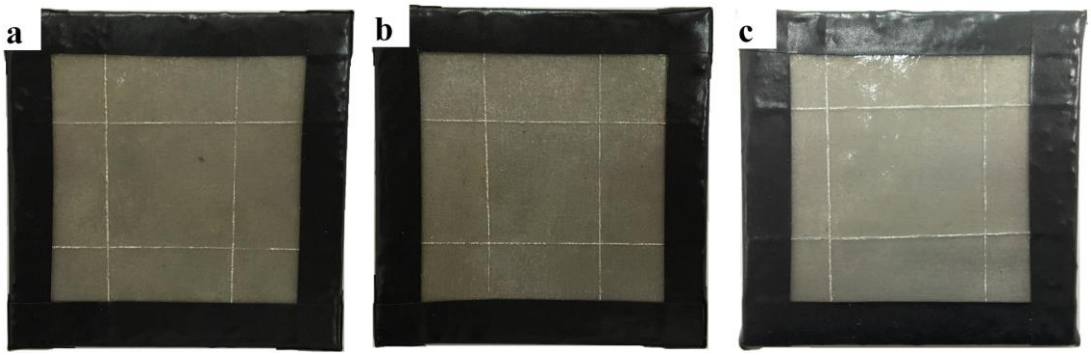

Figure S7. Photos of various coatings before immersion: (a) irradiated-MCs-3, (b) water-soaked-MCs-3, (c) irradiated-unbroken-coatings, respectively.

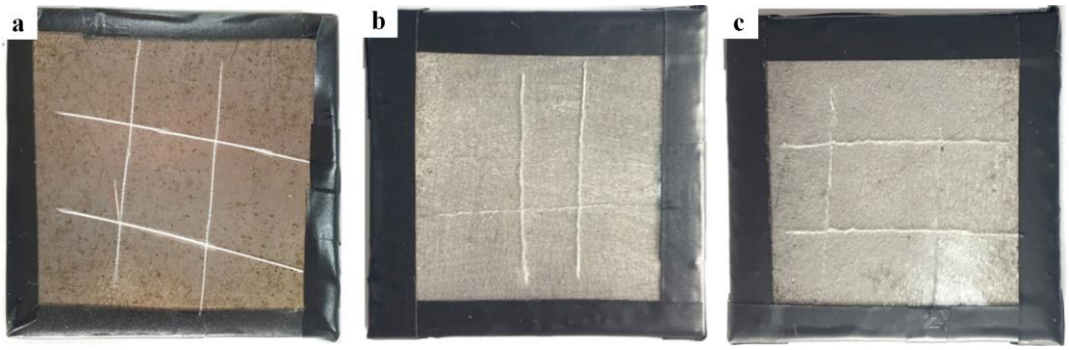

Figure S8. Photos of various coatings before immersion: (a) control specimen, (b) specimen with 10 wt% MCs-3, (c) specimen with 15 wt% MCs-3, respectively.

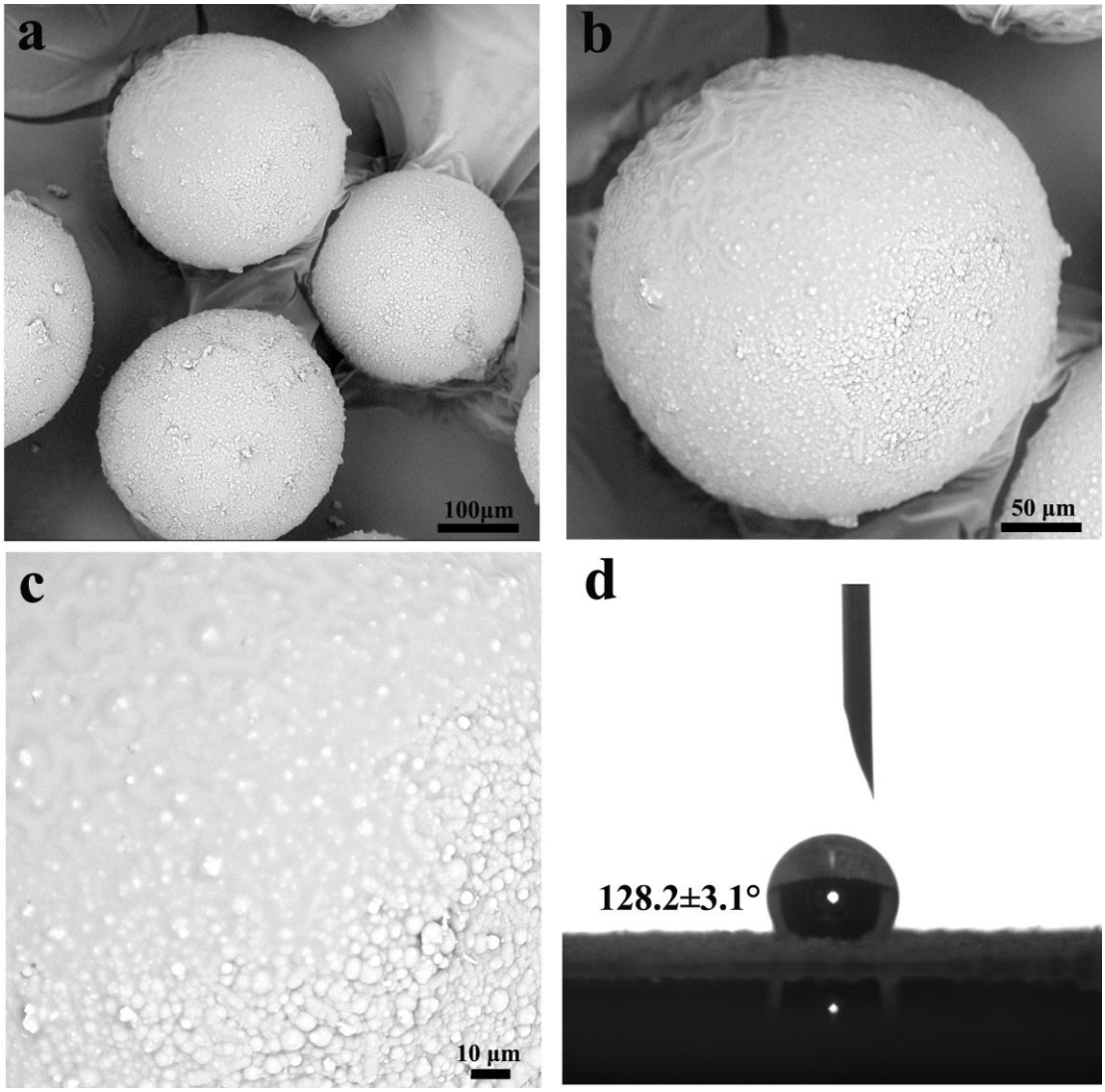

Figure S9. (a-c) SEM images of the microcapsules without hierarchical structure on the shell surface. (d) CA photo of water droplet on the surface of microcapsules.

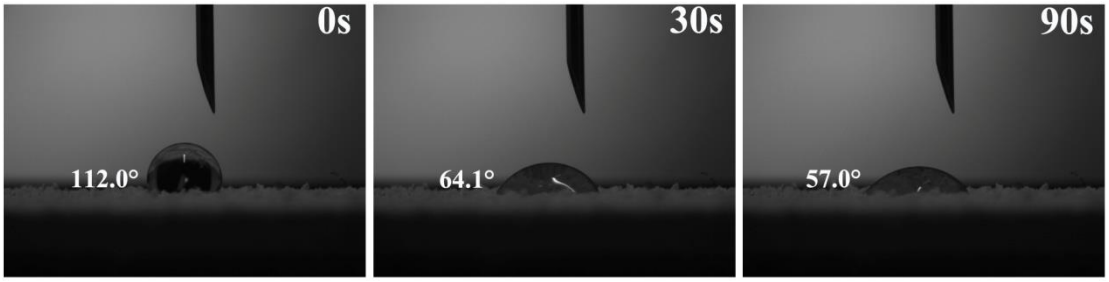

Figure S10. Contact angle (CA) photos of water droplet on the surface of the microcapsules only containing ESO and CGE (without HDI).

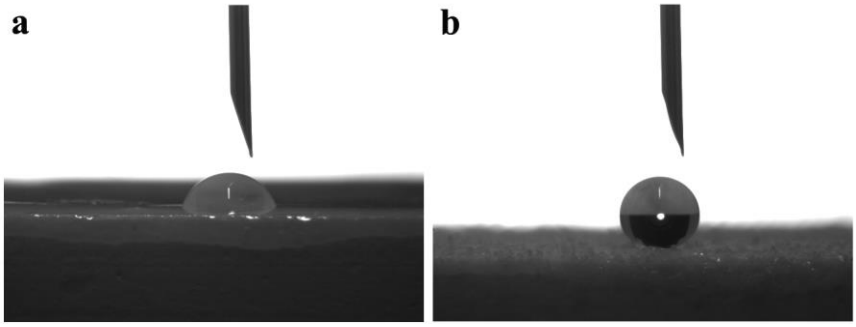

Figure S11. CA photos of water droplet on (a) pure epoxy coating and (b) MCs-3-bound epoxy coating.