Supporting Information

Switchable Multimode Microlaser based on AIE Microsphere

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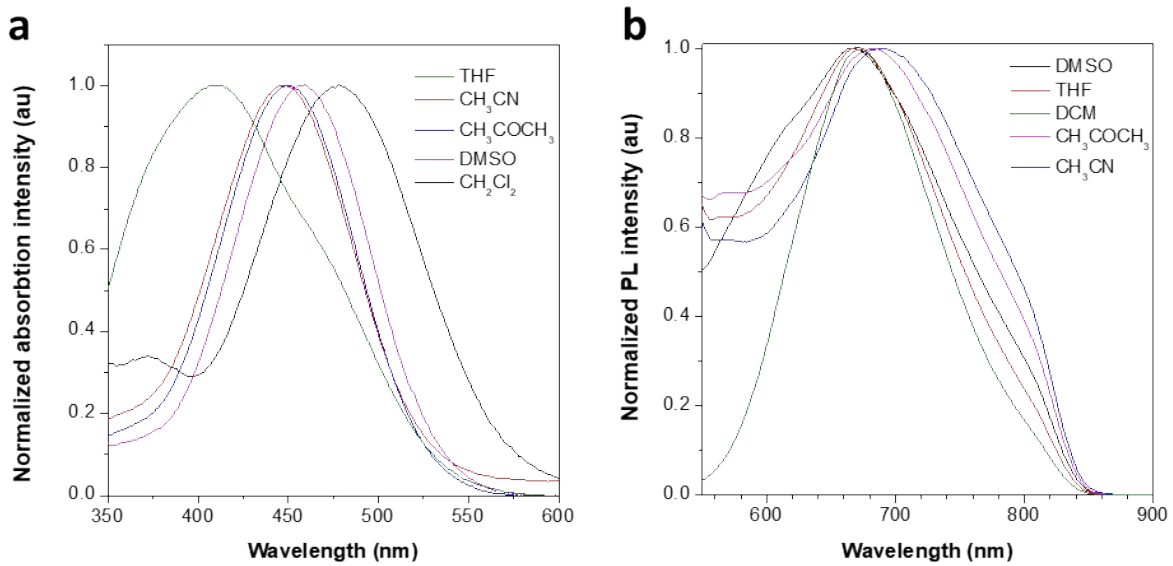

Figure S1. a) Normalized UV-Vis spectra of ASCPI in different solvents. b) Normalized emission spectra of ASCPI in different solvents.

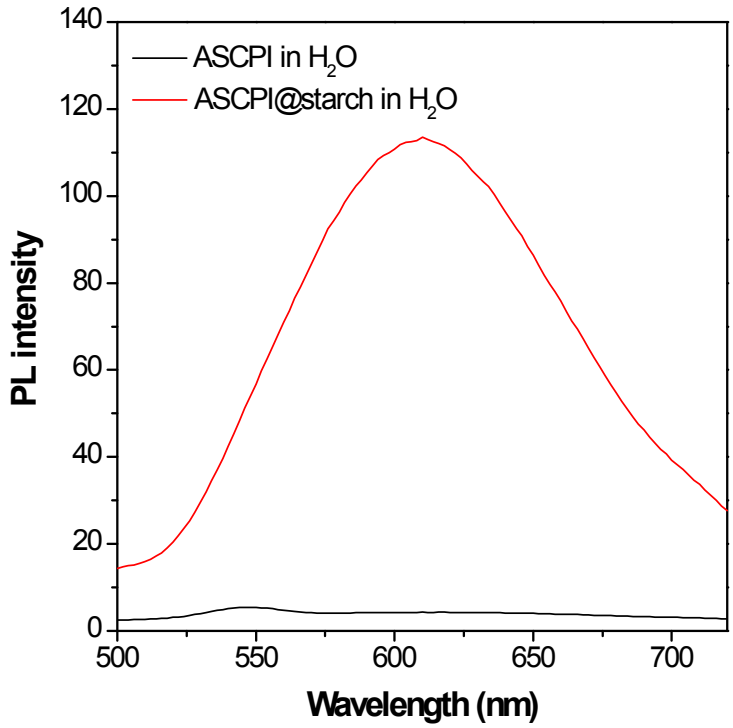

Figure S2. PL spectra of ASCPI and ASCPI@starch in water. (10^{-5} mol/L, excitation: 460 nm)

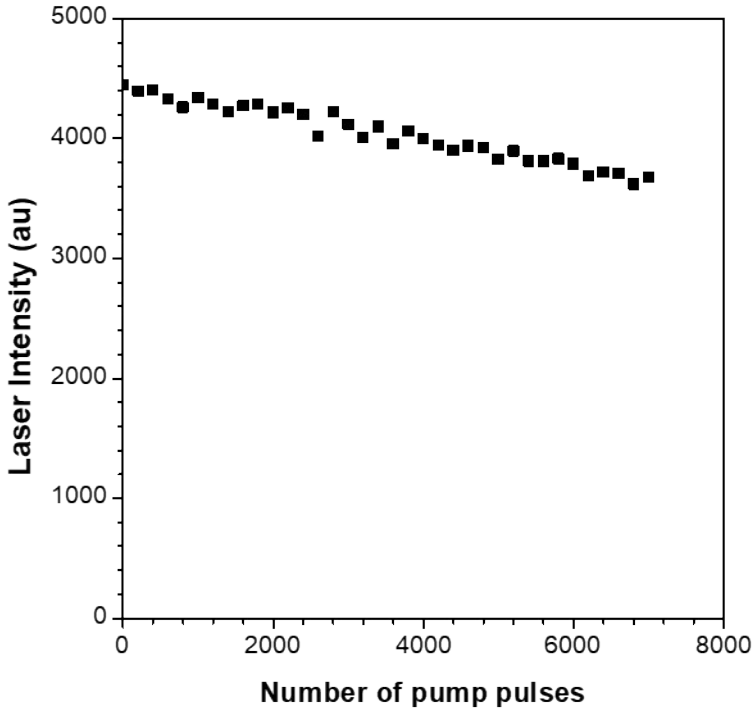

Figure S3. Lasing intensity as a function of pulse number.

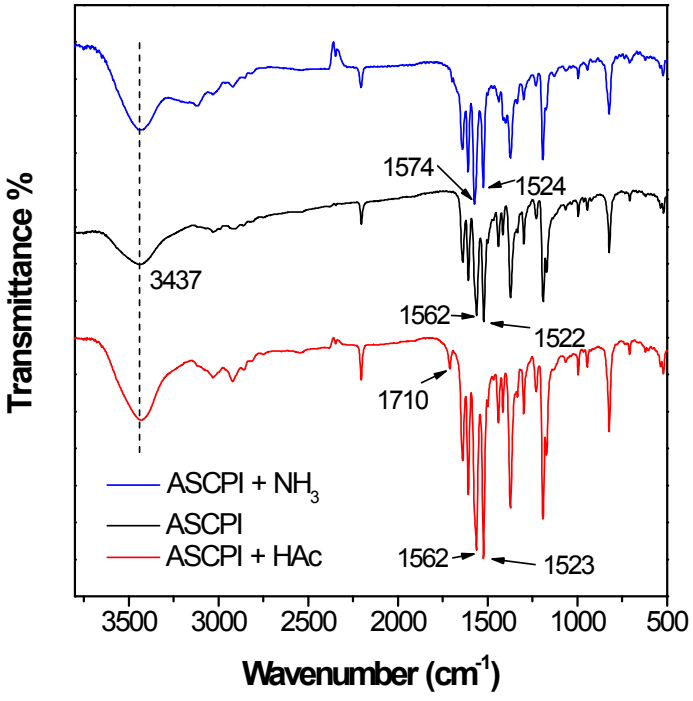

Figure S4. Fourier transform infrared spectra of the ASCPI under alternate exposure to HAc, NH_3 and air.

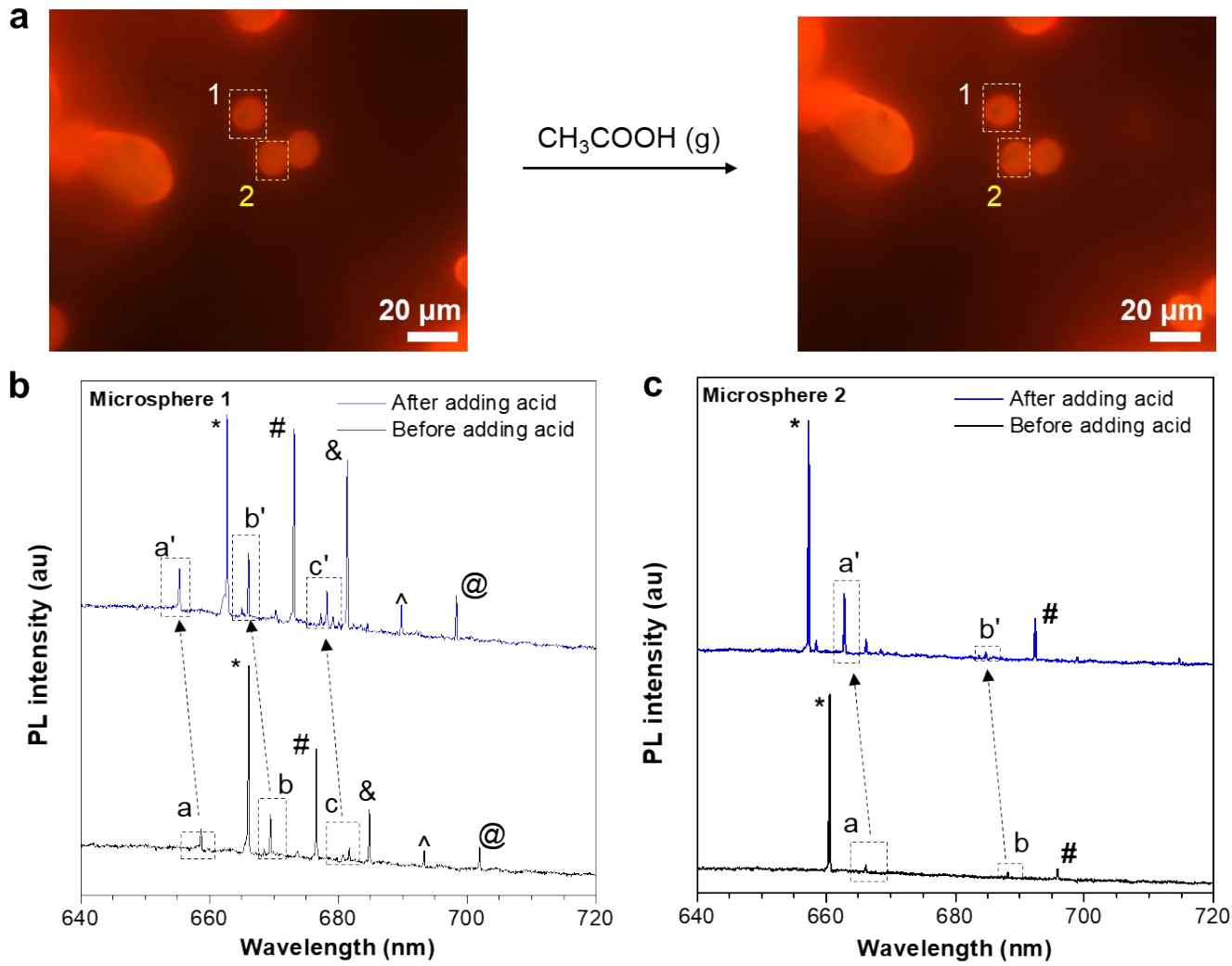

Figure S5. (a) PL images of an ASCPI@starch microsphere under alternate exposure to HAc and air. Scale bars: 20 μm. (b–c) Wavelength shift of lasing modes in the ASCPI@starch microsphere **1** (b), **2** (c) under alternate exposure to HAc and air, respectively.

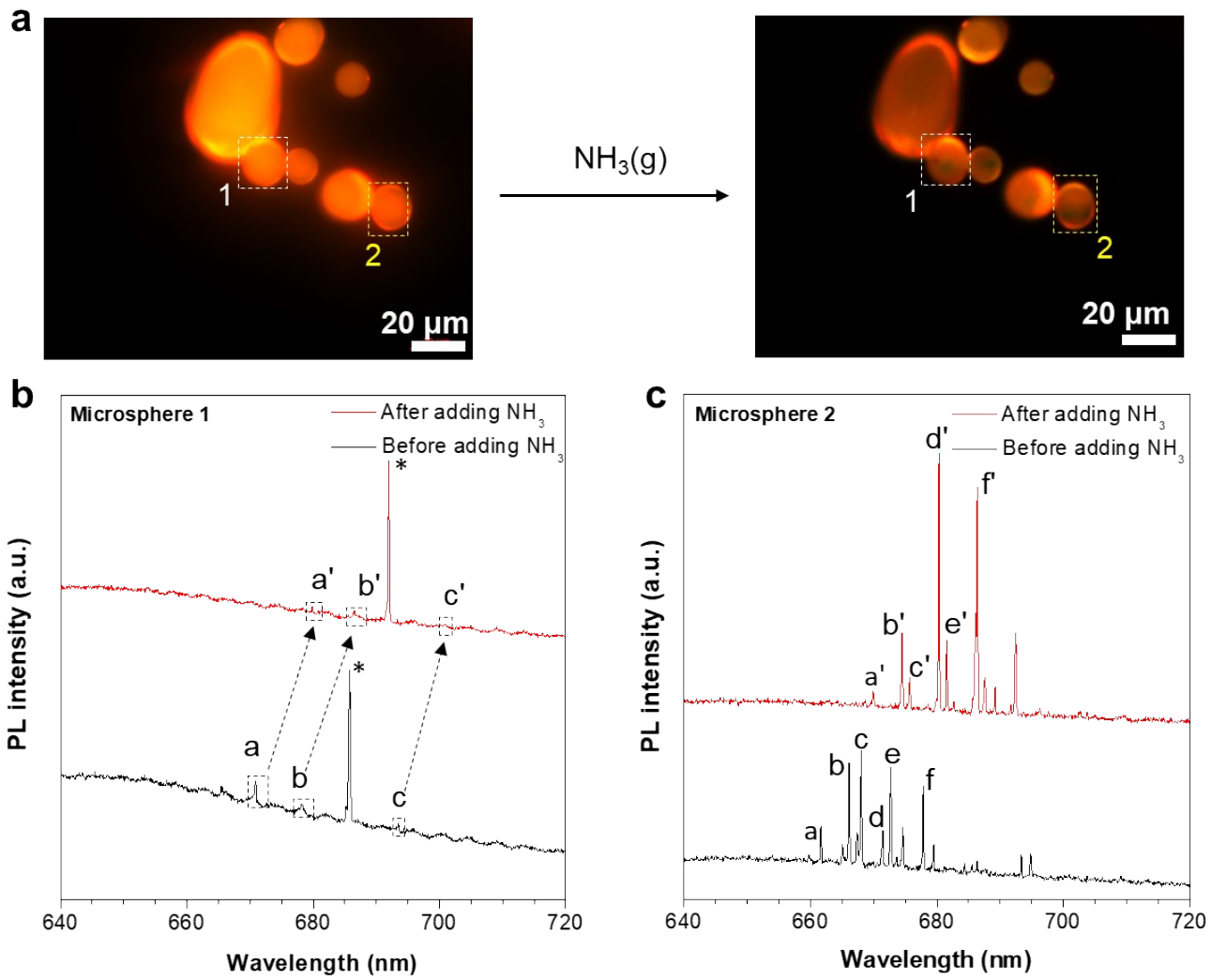

Figure S6. (a) PL image of an ASCPI@starch microsphere under alternate exposure to NH_3 and air. Scale bars: 20 μm. (b–c) Wavelength shift of lasing modes in the ASCPI@starch microsphere **1** (b), **2** (c) under alternate exposure to NH_3 and air, respectively.

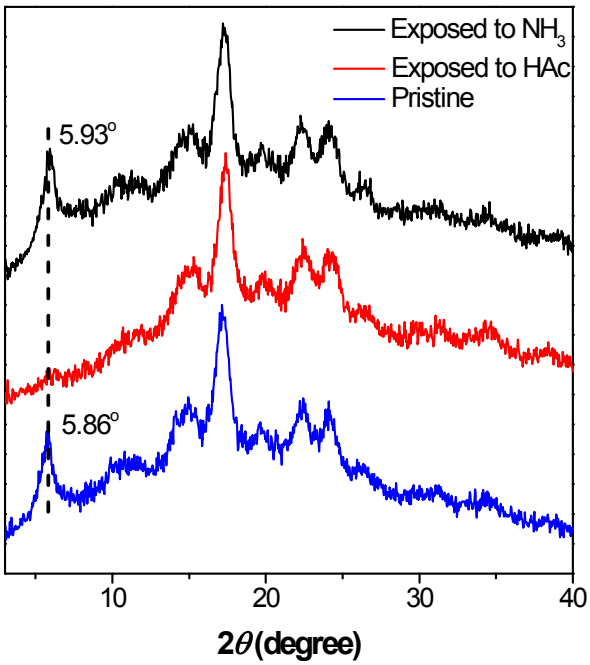

Figure S7. XRD patterns of the ASCPI@starch microspheres under alternate exposure to HAc, NH_3 and air.

Table S1. Photophysical properties of the microspheres under alternate exposure to air, HAc and NH_3.

	λ_{em} [a]	τ [b]	Φ_{PL} [c]	k_r [d]	k_{nr} [d]
	[nm]	[ns]	[%]	[ns^{-1}]	[ns^{-1}]
Pristine	638	1.41	14.7	0.1043	0.6050
HAc	633	1.03	10.6	0.1029	0.8080
NH_3	646	1.30	7.6	0.0585	0.7108

Abbreviation: [a] Emission peak, [b] Fluorescence lifetime, [c] Φ_{PL} = photoluminescence quantum yield, determined using an integrating sphere, [d] $k_r = \Phi/\tau$ and $k_{nr} = (1 - \Phi)/\tau$, k_r = radiative decay rate constant, k_{nr} = non-radiative decay rate constant.