

*Electronic Supplementary Information for RSC Advances*

## **Liquid Marble Containing Degradable Polyperoxides for Adhesion**

### **Force-Tunable Pressure-Sensitive Adhesives**

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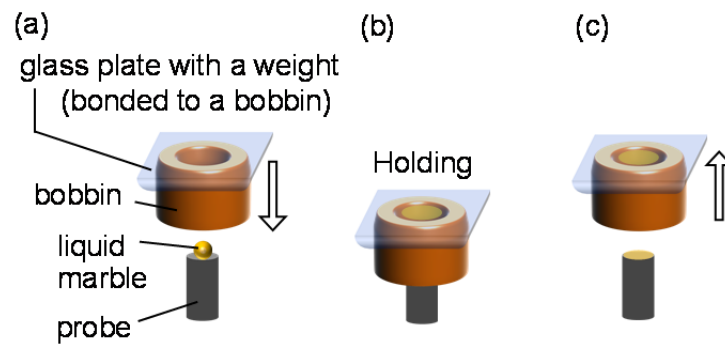
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## **Experimental Details**

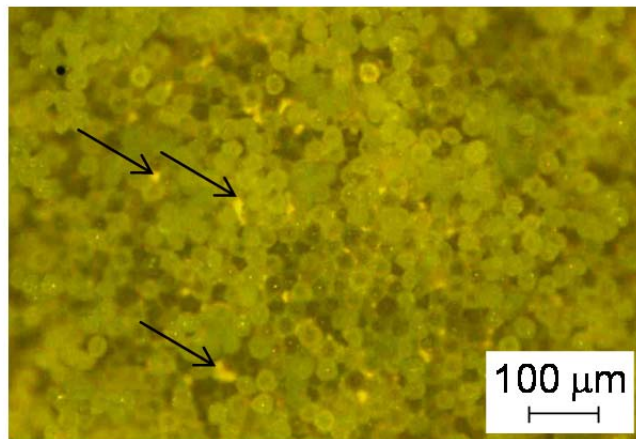
### **Measurements**

The  $^1\text{H}$  NMR spectra were recorded by a Bruker AV300N spectrometer. Digital microscope images were recorded by a Keyence VHX-500.

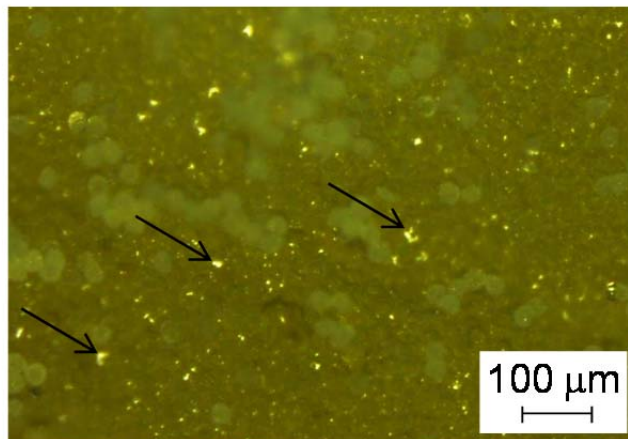


**Fig. S1.** Schematic illustration of the tack measurement by a probe tack tester: (a) a bobbin bonded to a glass plate having a predetermined weight was approached to the probe carrying a liquid marble, (b) the glass plate and bobbin are lifted by the probe, and (c) the glass plate bonded to the bobbin was detached from the probe.

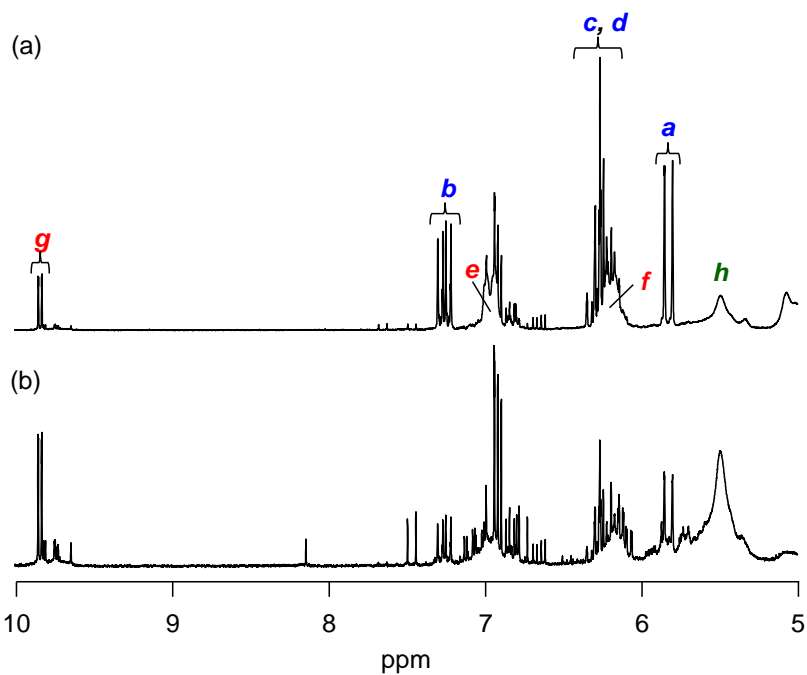
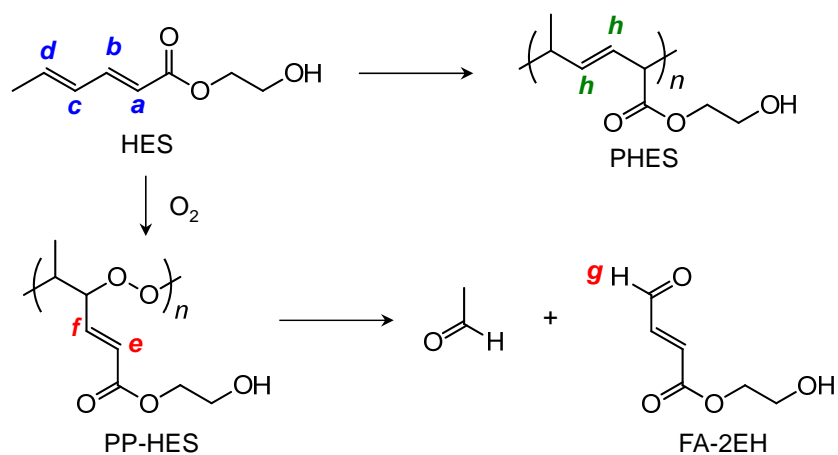
(a)



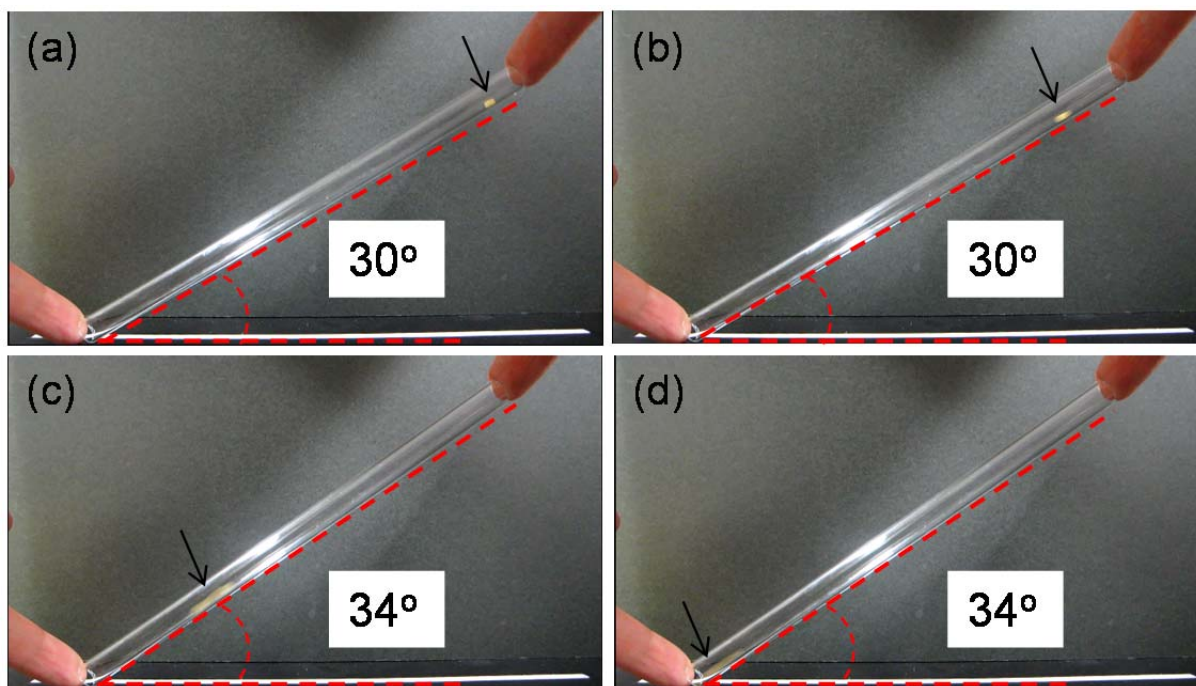
(b)



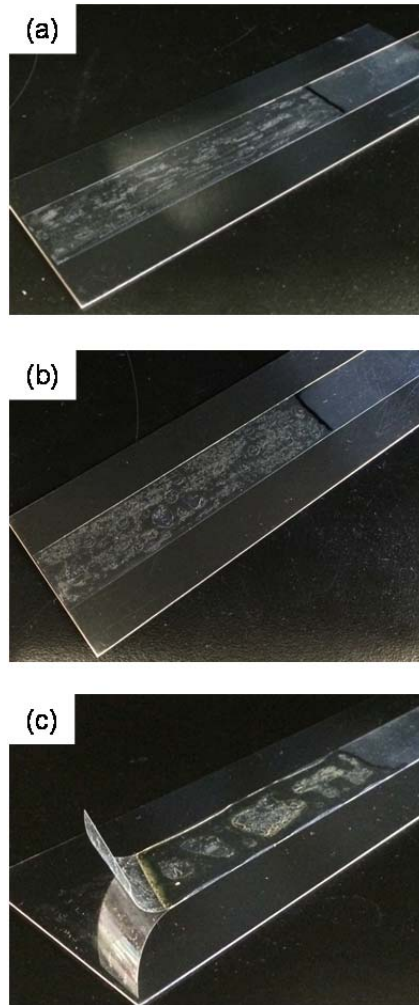
**Fig. S2.** Digital microscope images of the surface of the liquid marble before (a) and after polymerization (b). The indicated points by the arrows are not covered by lycopodium.



**Fig. S3.**  $^1H$  NMR spectra of the liquid marble containing PP-HES (a) before and (b) after heating at 100 °C for 1 h. Measured in acetone- $d_6$



**Fig. S4.** Frame images of the movie recording the polymerized liquid marble (indicated by the arrows) rolling down on the sliding glass tube, one side of which was gradually lifted up. The time passed in the order of (a), (b), (c), and (d), and the sliding angles of the glass tube were inserted in the figures. The original movie is also available in the separate file as the supporting material.



**Fig. S5.** Photographs of the 180° peel test specimens bonded by the liquid marbles after heating at (a) 60, (b) 90, and (c) 100 °C for 1 h. Void formation was observed only for (c).

**Table S1.** Effect of the composition of adhesive layer on 180° peel behavior.

Entry	Composition <sup>a</sup> (wt%)				180° peel strength (N/20 mm)	failure mode
	PP-HES	PHES	HES	FA-2HE		
1	56	33	9	2	1.20	cohesive
2	56	37	6	1	0.23	stick slip

<sup>a</sup>Determined by <sup>1</sup>H NMR analysis.