Electronic Supplementary Material (ESI) for RSC Applied Polymers.

Supporting Information

Hydrogen bonded polymer complex thin films for highly stretchable gas barrier

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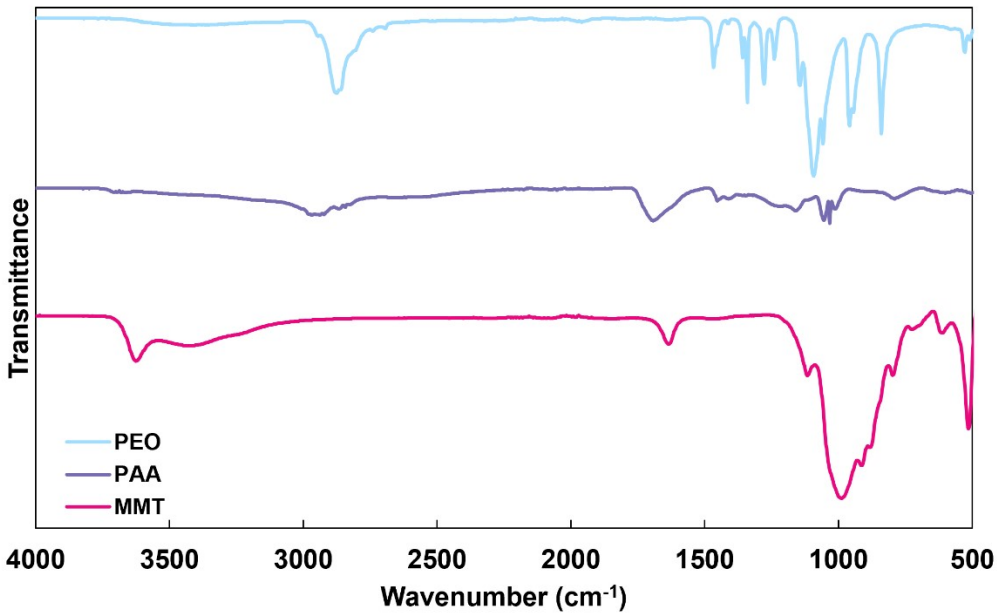

Fig. S1 FTIR spectra of PEO, PAA, and MMT.

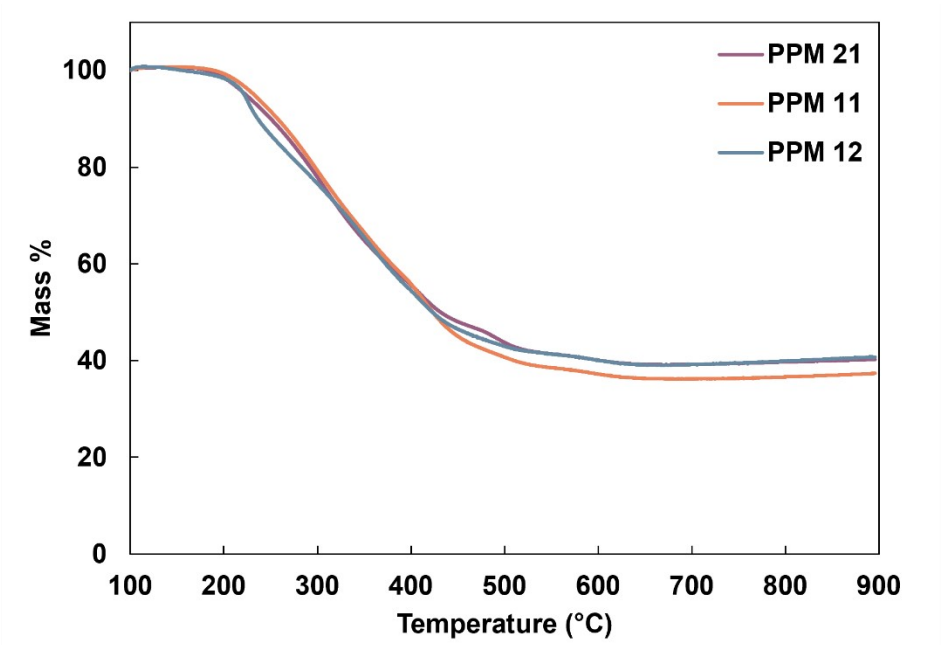

Fig. S2 TGA thermograms of HBPCs under air.

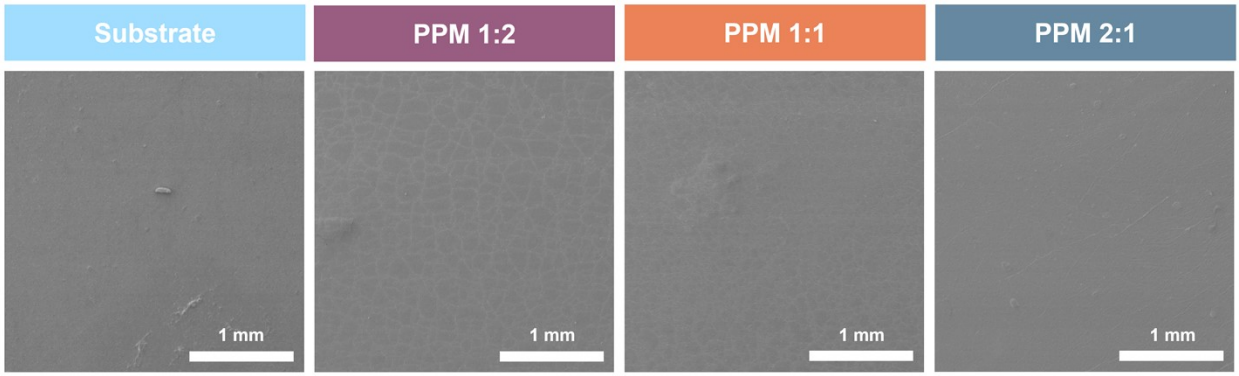

Fig. S3 SEM images of uncoated and coated rubber with various HBPC recipes.

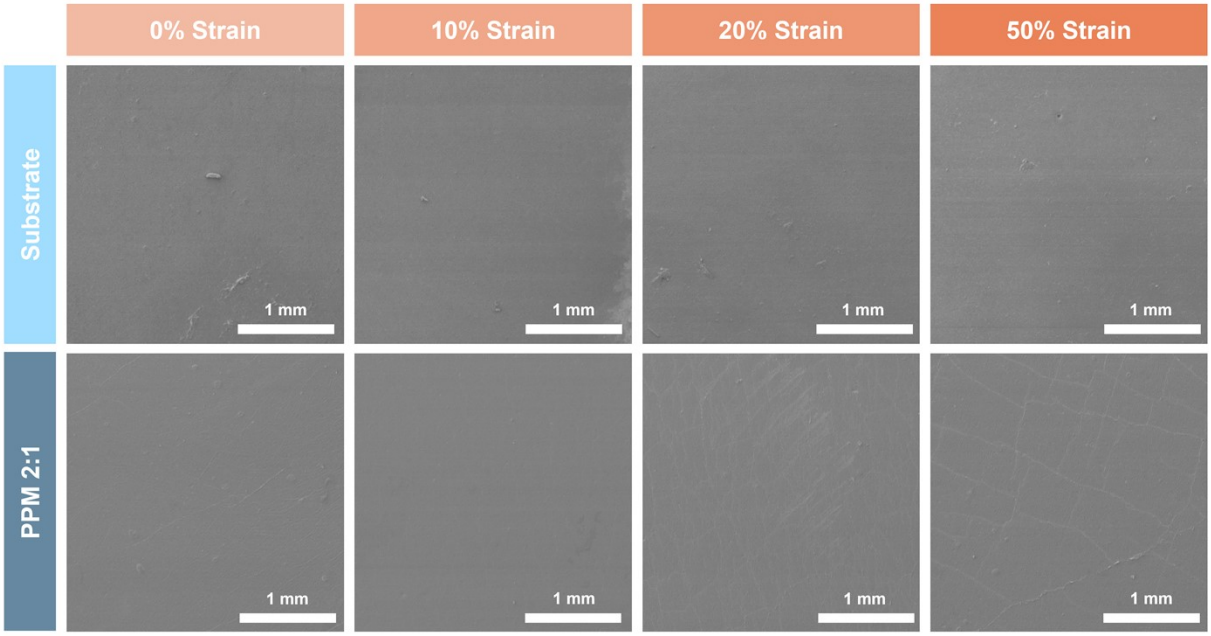

Fig. S4 SEM images of uncoated rubber and rubber coated with PPM 2:1 after 0%, 10%, 20% and 50% strain.

Table S1 Barrier properties of uncoated and coated natural rubber

Sample	Film Thickness (µm)	Coat Weight (g / m^2)	Strain (%)	OTR (cc / (m^2 · day))	Film Permeability* (·10^{-16} cc cm / (cm^2 s Pa))
Substrate	—	—	0	2110	—
			10	2030	—
			20	2180	—
			50	2100	—
PPM 1:2	1.07 ± 0.01	0.23 ± 0.17	0	1150	61.8
PPM 1:1	1.63 ± 0.03	1.52 ± 0.29	0	262	11.2
PPM 2:1	1.79 ± 0.01	1.75 ± 0.66	0	21.4	0.9
			10	20.1	0.8
			20	40.4	1.7
			50	138	6.0

*Film permeability was decoupled from the substrate using a previously described method.[S1]

Reference

S1) A. P. Roberts, B. M. Henry, A. P. Sutton, C. R. M. Grovenor, G. A. D. Briggs, T. Miyamoto, M. Kano, Y. Tsukahara and M. Yanaka, *J. Membr. Sci.*, 2002, **208**, 75–88.