Supporting Information

Modelling of Water Evaporation in Hydrogels Considering the State of Water in Tension

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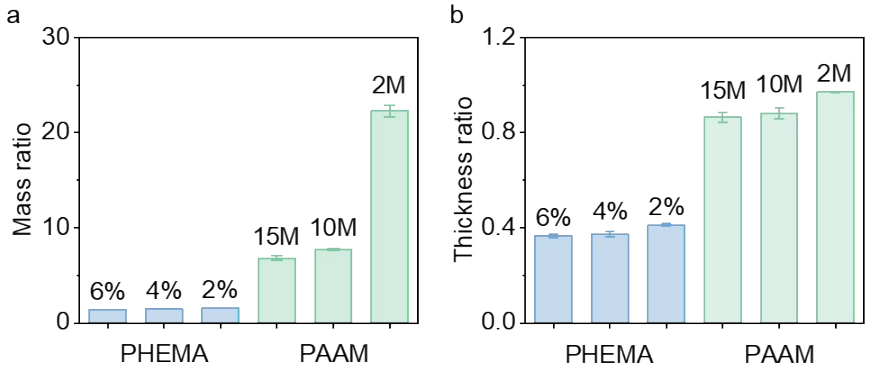

Figure S1. Mass ratio (a) and thickness ratio (b) of complete swelling hydrogels and dry hydrogels for various PHEMA and PAAM hydrogels. Since we constrained the shrinkage of the hydrogel in the plane direction during the thickness test, the thickness change also represents the volume change.

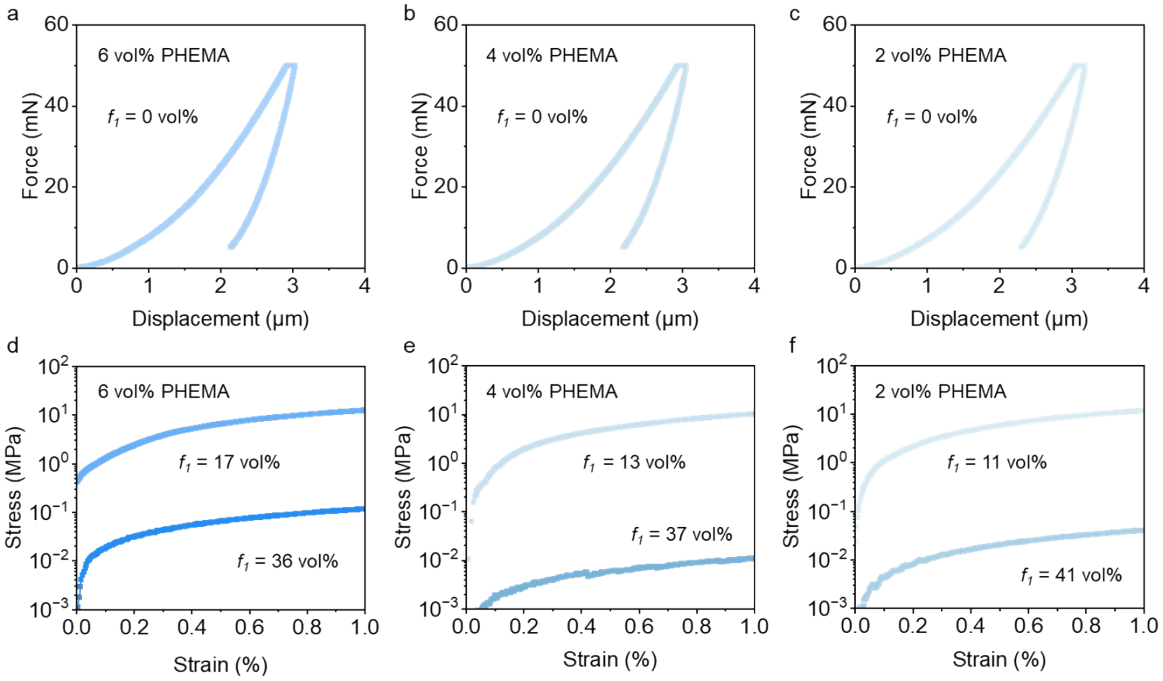

Figure S2. Nanoindentation and Tensile Test of Hydrogels. (a-c) Nanoindentation tests for (a) 6 vol%, (b) 4 vol%, (c) 2 vol% PHEMA hydrogels under water contents of 0 vol%. (d-f) Tensile tests for (d) 6 vol%, (e) 4 vol%, (f) 2 vol% PHEMA hydrogels under fully swelling state and modulus transition stage.

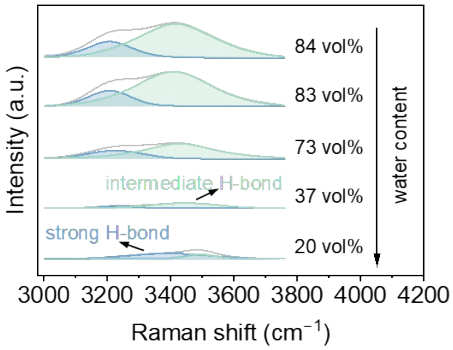

Figure S3. Raman spectra characterizing the state of water in hydrogels with different water contents. Water contents ranging from 73 to 84 vol% were obtained from PAAM (2M) hydrogels, while those ranging from 20 to 37 vol% were derived from PHEMA (6 vol%) hydrogels.

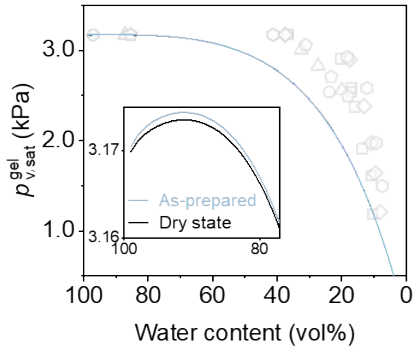

Figure S4. Predicted vapour pressure obtained by applying different reference states for the elastic term.

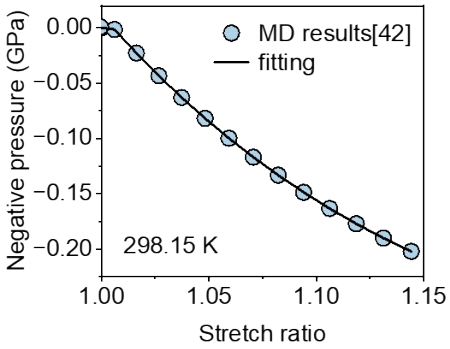

Figure S5. Relationship between pressure of liquid water with varied stretch ratios. Stretch ratio of 1 represents liquid water under standard conditions. When stretch ratio is between 1 and 1.006, linear fitting is used to fit the data. When stretch ratio is between 1.006 and 1.15, quadratic polynomial is utilized to fit the data.