

# Biomimetic Strain-Stiffening in Fully Synthetic Dynamic-Covalent Hydrogel Network

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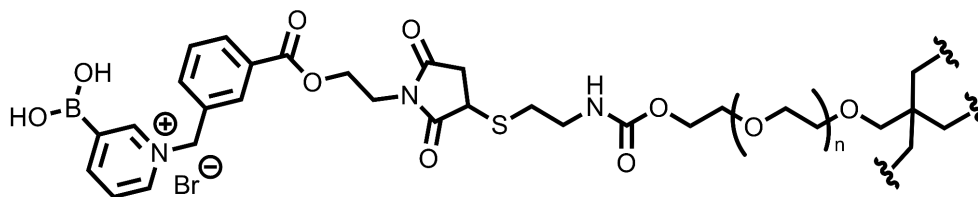
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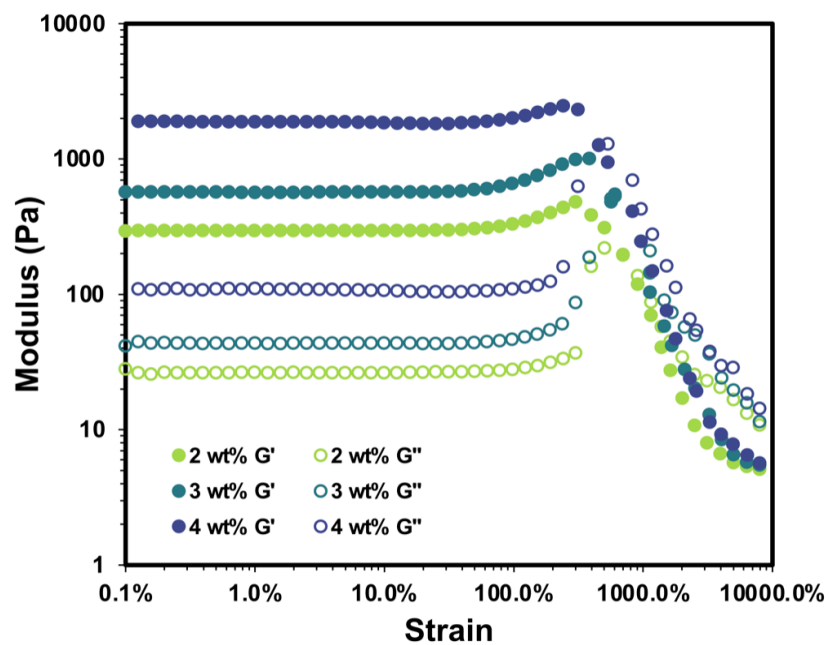
**Fig. S9-** 4aPEG-FPBA/4aPEG-Diol frequency sweeps, pH 8

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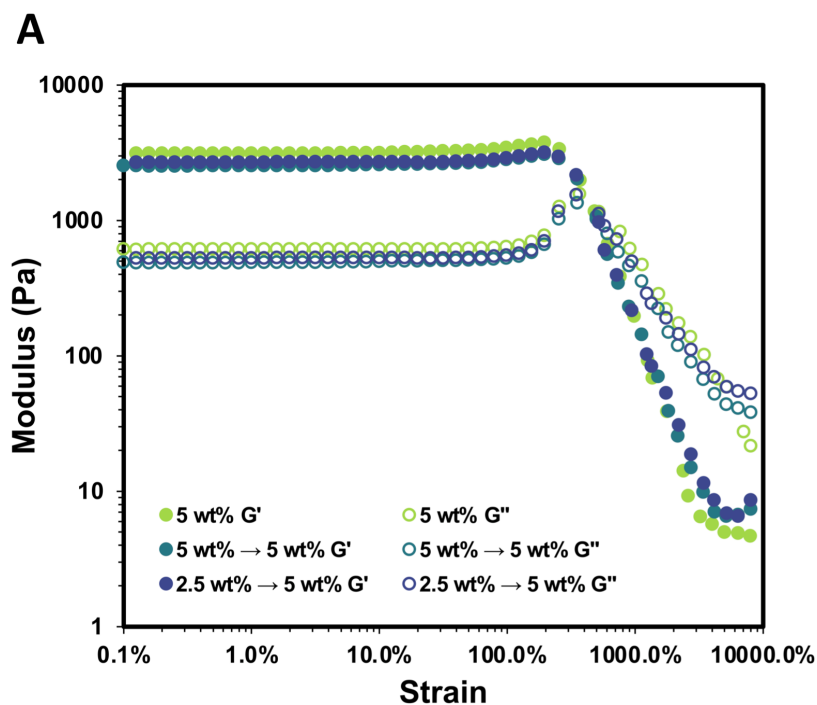
I. **Supplemental Data:**



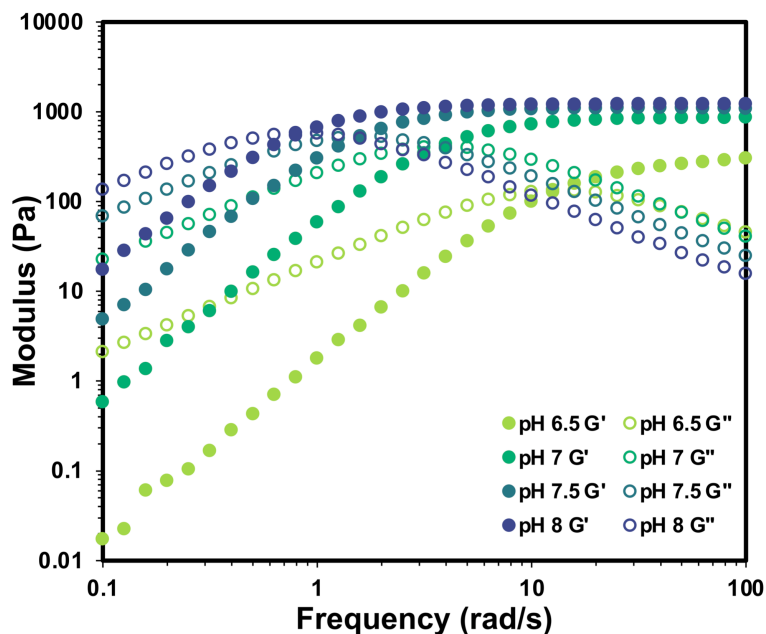
**Fig. S1:** Structure of 4aPEG-PyPBA.



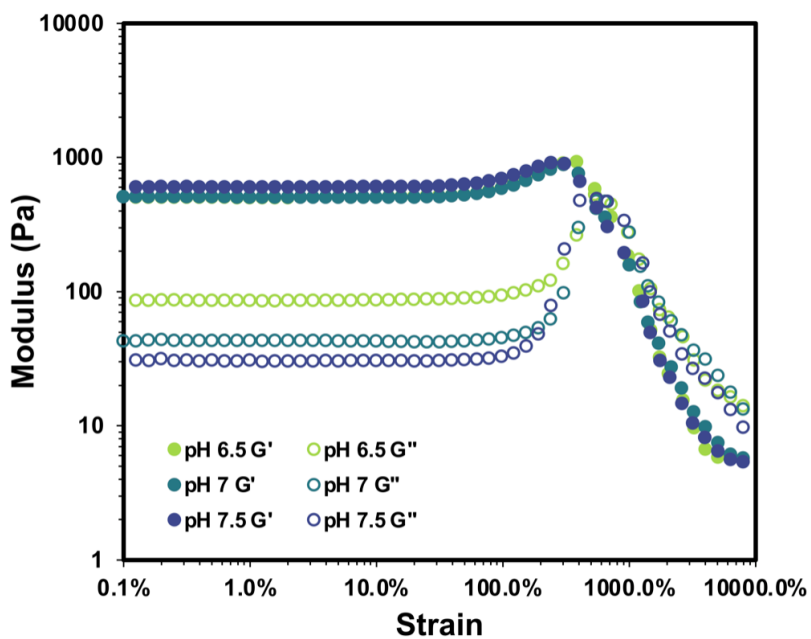
**Fig. S2:** Strain sweeps of 2-4 wt% 4aPEG-PyPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 7.



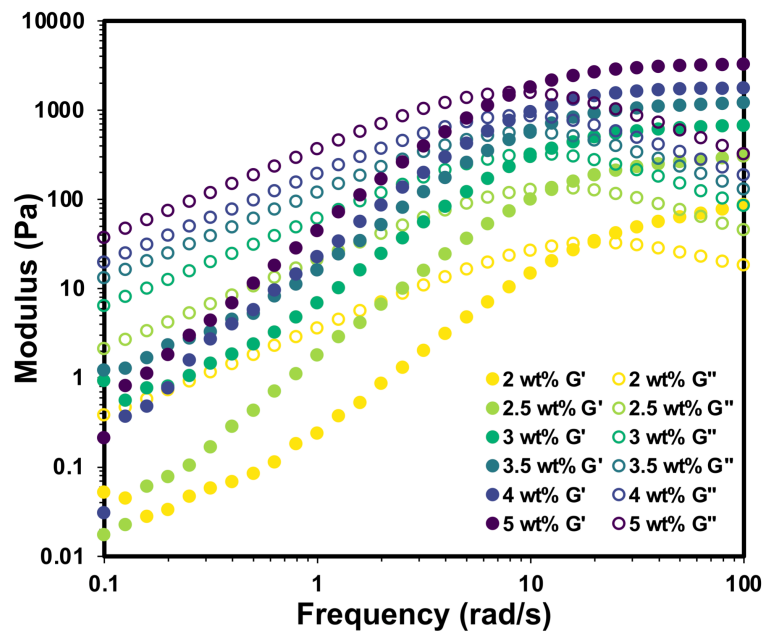
**Fig. S3:** Strain-stiffening behavior of 4aPEG-FPBA/4aPEG-Diol gels upon drying and rehydration. (A) Strain sweeps of a freshly prepared 5 wt% gel, a “5 wt% → 5 wt%” gel prepared at 5 wt% with 150 mM pH 6.5 buffer, lyophilized, and rehydrated to 5 wt% with DI water, and a “2.5 wt% → 5 wt%” gel prepared at 2.5 wt% with 75 mM pH 6.5 buffer, lyophilized, and rehydrated to 5 wt% with DI water. (B) Critical stress and stiffening index of these three gels.



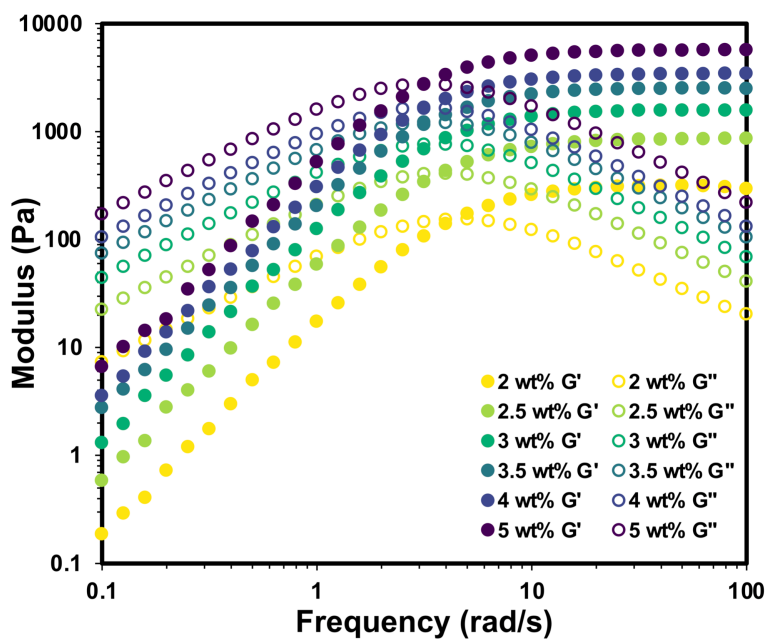
**Fig. S4:** Frequency sweeps of 2.5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 6.5, 7, 7.5, and 8.



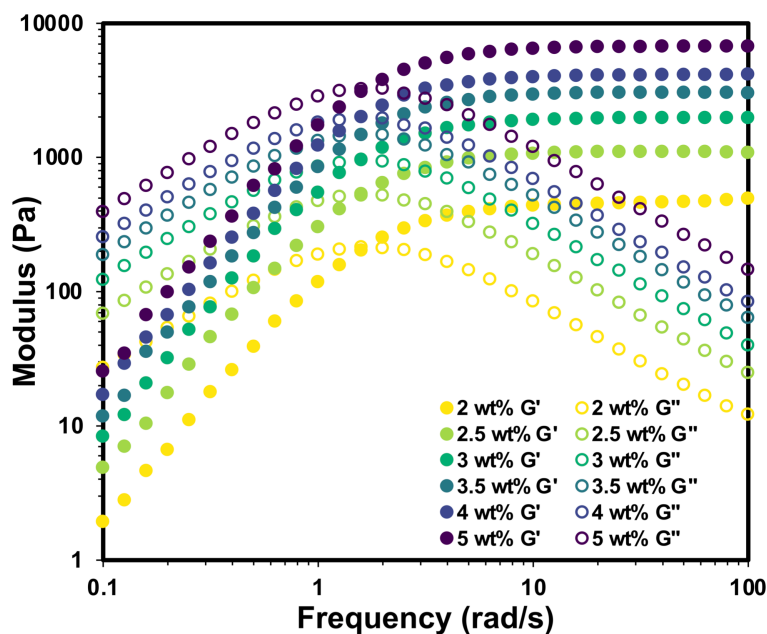
**Fig. S5:** Strain sweeps of 3 wt% 4aPEG-PyPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 6.5, 7, and 7.5.



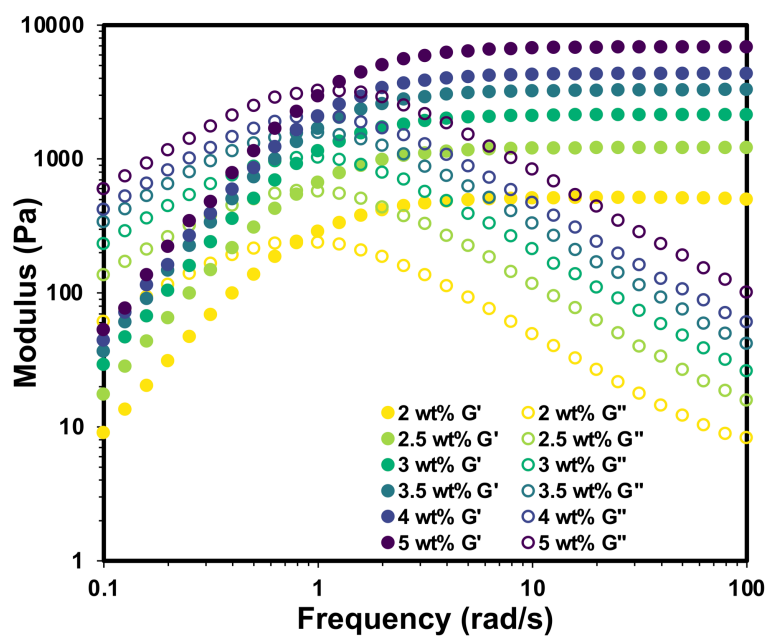
**Fig. S6:** Frequency sweeps of 2-5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 6.5.



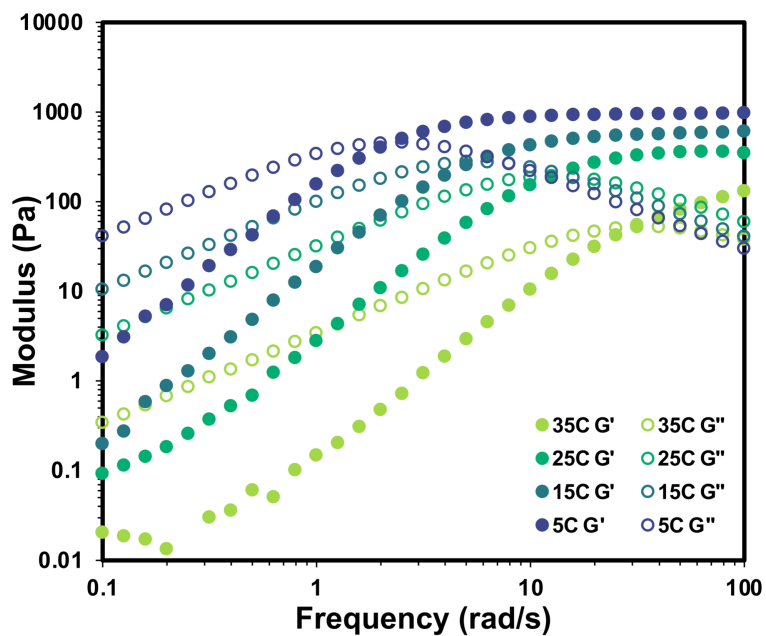
**Fig. S7:** Frequency sweeps of 2-5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 7.



**Fig. S8:** Frequency sweeps of 2-5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 7.5.



**Fig. S9:** Frequency sweeps of 2-5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 25°C, prepared at pH 8.



**Fig. S10:** Frequency sweeps of 2.5 wt% 4aPEG-FPBA/4aPEG-Diol hydrogels at 5°C, 15°C, 25°C, and 35°C, prepared at pH 6.5.