

Supplementary information

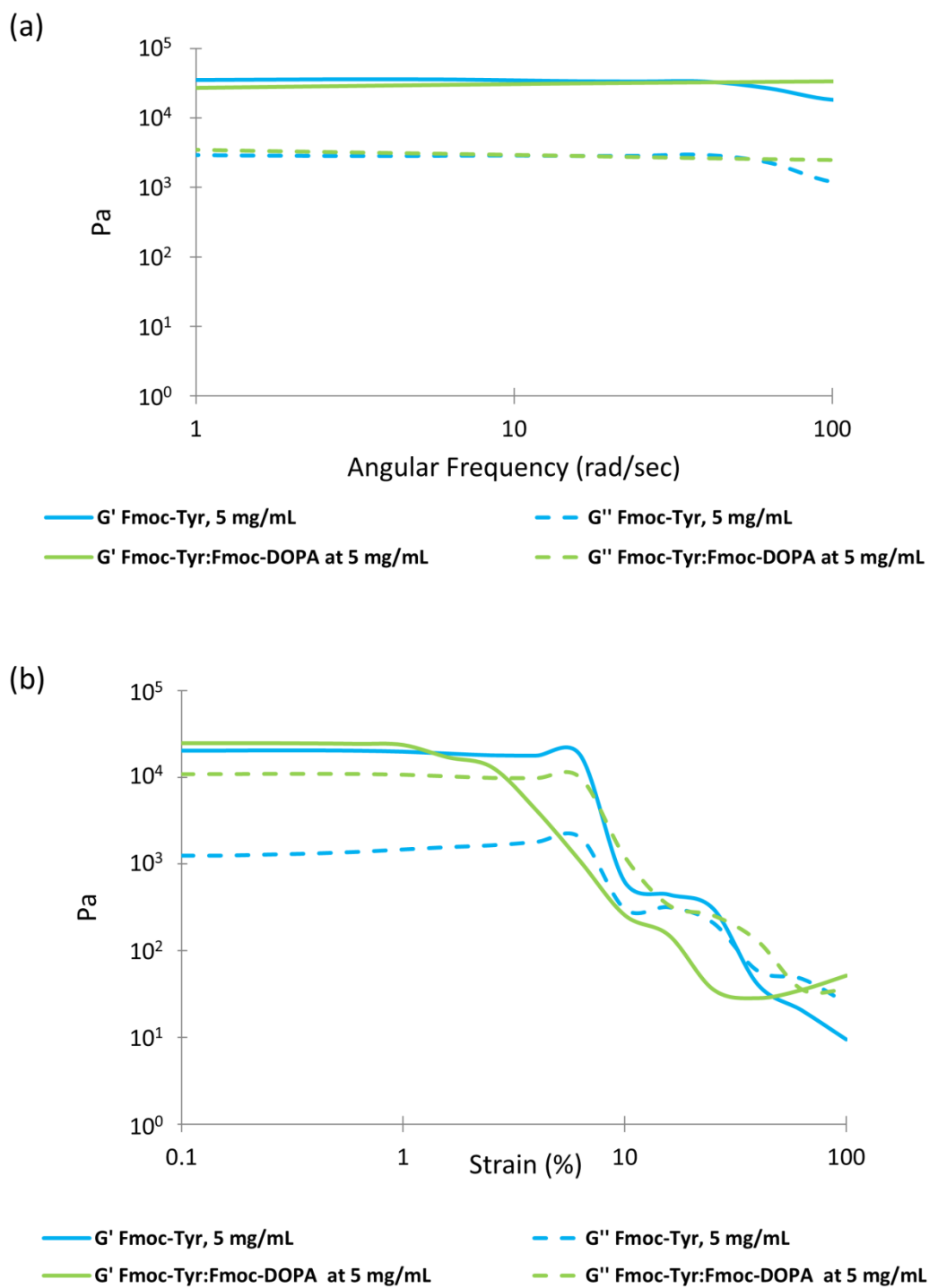
**Synergetic functional properties in two-component single amino acid-based hydrogels**

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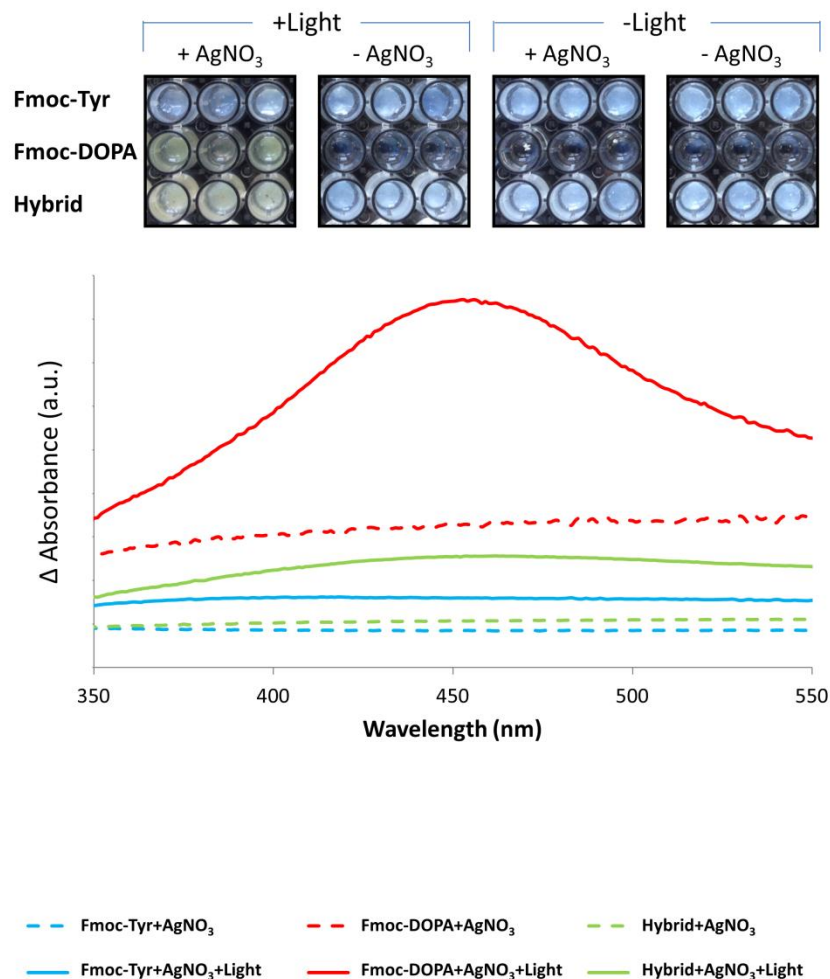
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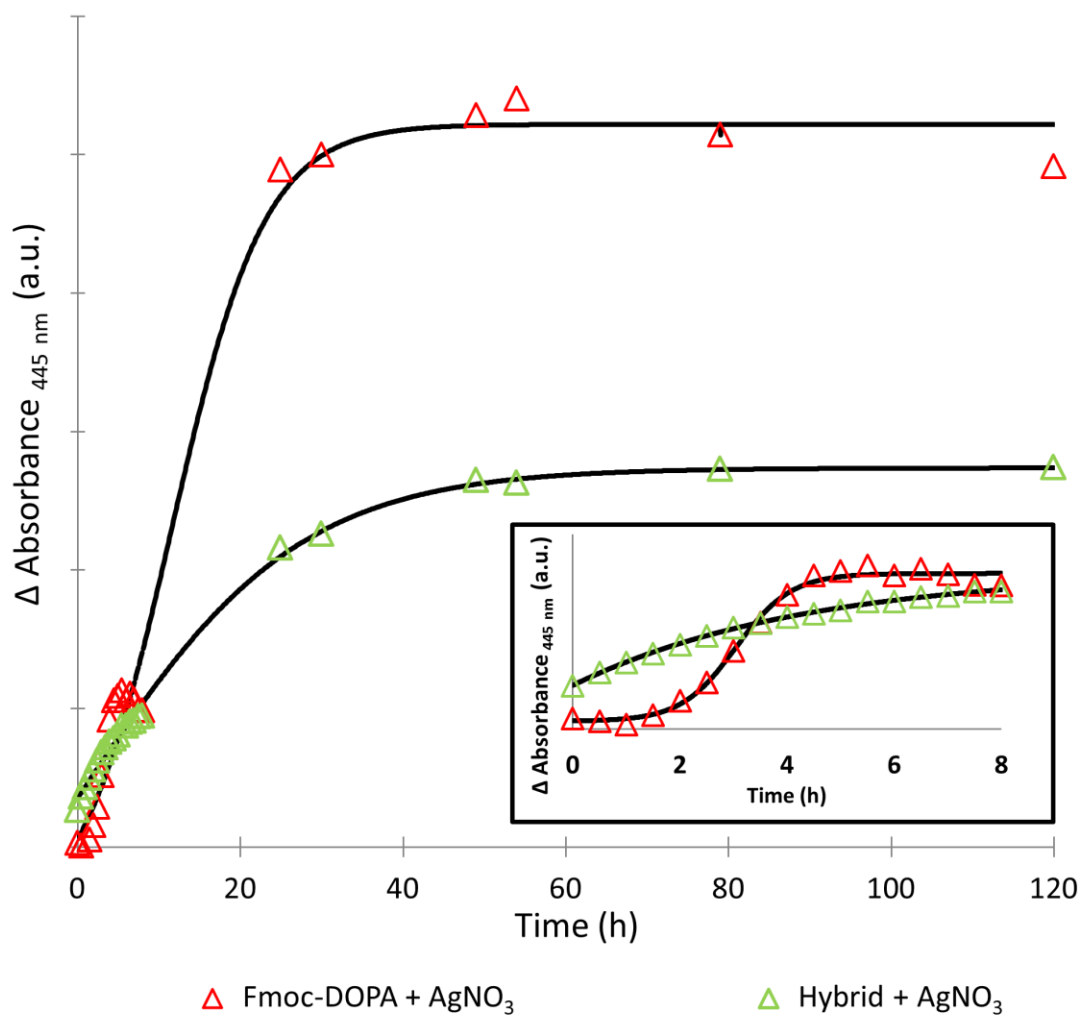
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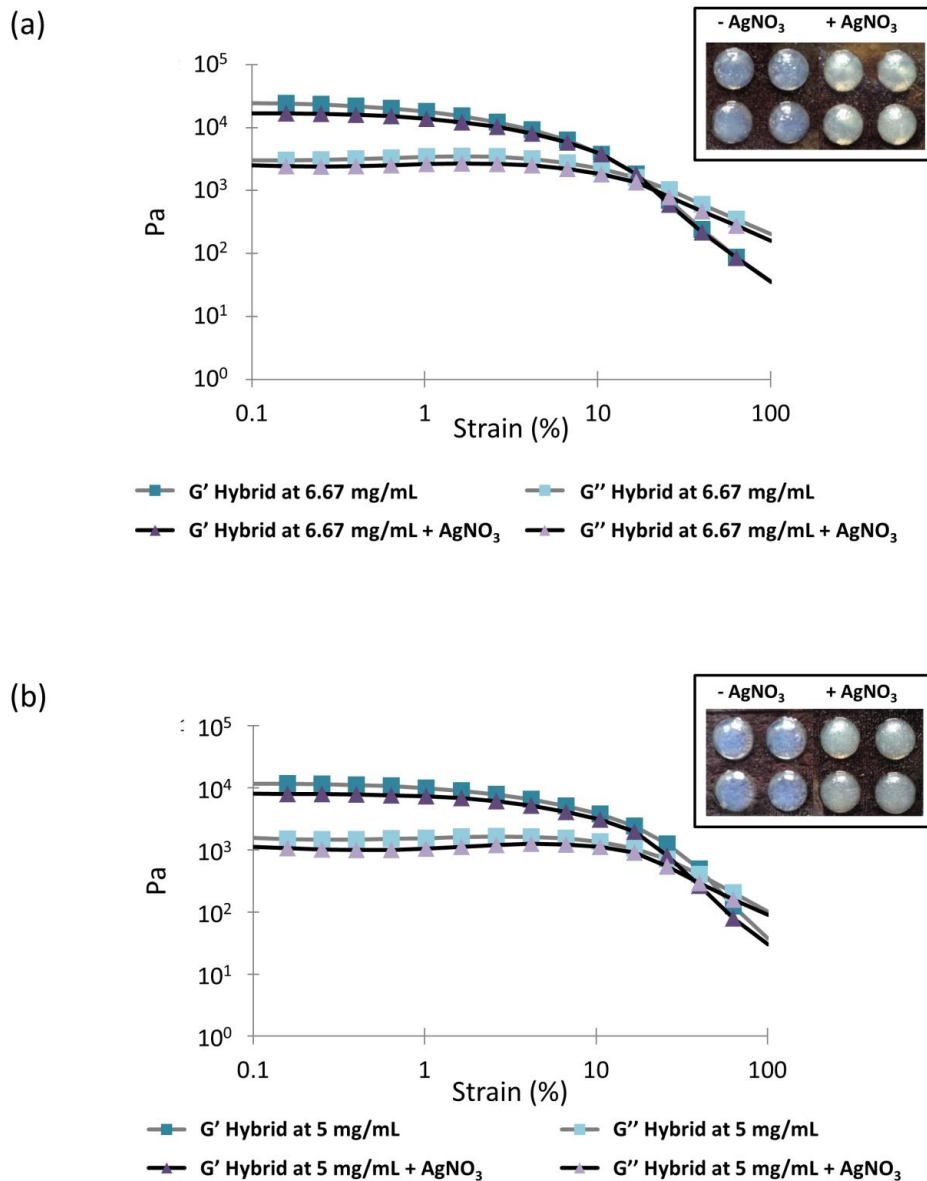
**Fig. S1** Frequency sweep (a) and strain sweep (b) characterization of *in situ*-formed hydrogels at 25 °C.



**Fig. S2** Ionic silver reduction by pre-prepared hydrogels. (a) UV-Vis spectra of hydrogels prepared from the individual Fmoc-Tyr and Fmoc-DOPA gelators (3.25 and 1.25 mg/mL respectively) and their 3:1 hybrid at 5 mg/mL after 5 days of incubation with approximately 0.22 mM silver nitrate, in the presence or absence of light. The spectra are subtraction result of samples incubated without silver nitrate from the silver nitrate-added samples. (b) Photograph of a 96-well plate corresponding to the previous panel.



**Fig. S3** Kinetics of silver nanoparticles (AgNP) formation in pre-prepared hydrogels. Absorbance at 445 nm was monitored over a time period of five days in gels prepared from either 1.67 mg/mL Fmoc-DOPA gelator or Fmoc-Tyr:Fmoc-DOPA 3:1 gelators at 6.67 mg/mL, following the addition of approximately 0.33 mM silver nitrate and incubation while exposed to light. The measurements at each time point is the subtraction result of absorbance at 445 nm of samples incubated without silver nitrate from the silver nitrate-added samples. Inset shows the kinetics during the first 8 h.



**Fig. S4** Strain-sweep measurements of AgNP-containing hybrid hydrogels at 25 °C. (a) Strain-sweep measurements of 3:1 Fmoc-Tyr:Fmoc-DOPA hybrid gels at 6.67 mg/mL, prepared in the presence or absence of approximately 0.33 mM silver nitrate. (b) Strain-sweep measurements of 3:1 Fmoc-Tyr:Fmoc-DOPA hybrid gels at 5 mg/mL, prepared in the presence or absence of approximately 0.22 mM silver nitrate. All gels were prepared using silicon isolators and incubated for two days in the presence of light prior to measurements. Strain-sweep measurements were conducted at a frequency of 1 Hz. Insets are photographs of the gels immediately prior to measurement.