

How is a gel premix made?

The gel premix in the molds is sandwiched between a glass slide and a polyurethane film and heated for 2 min at 85 °C on a Peltier-controlled heating chamber. After cooling down to 4 °C for 10 min, the supports are separated and the gel suspended on its mold is placed in a PCR tube containing 1 mL TE buffer (NaCl 100 mM, MgAc 2.12 mM).

What is the storage modulus of a hydrogel?

At RT, the storage modulus, G' , of the hydrogel spans from as low as 0.4 Pa for 0.35 wt% up to above 400 Pa for a 1.4 wt% DNA. This is a direct result of providing a higher crosslinking density in a given volume during the re-organization step in the temperature ramp. The values are similar to the ones reported for plasmid-based hydrogels ⁴².

Are thermosetting and thermo-reversible DNA hydrogels programmable mechanofluorescent?

We have introduced the facile assembly of thermosetting and thermo-reversible DNA hydrogels of high stretchability and demonstrated the integration of a modular toolbox of DNA tension probes to realize programmable mechanofluorescent properties.

How are force sensor modules assembled?

The force sensor modules are assembled separately from commercial polyacrylamide gel electrophoresis-purified ssDNA via hybridization in a temperature ramp. Figure 1b depicts the general design of the force-sensing modules.

Can FRET-based molecular tension probes be used in 3D materials?

Implementing FRET-based molecular tension probes within macroscopic DNA materials ^{36,37,38,39} would provide a platform for the modular design of mechanosensitive materials operational in 3D, with unmatched modularity, spatiotemporal resolution, and programmable sensitivity.

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