

Rehydratable gel for rapid loading of nanoliter solution and its application in protein crystallization

Supporting information

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Estimation of relative protein concentration in fresh gel

In the control experiment using fresh gel, the relative protein concentration in the fresh gel was determined by the following equation:

$$c_{gel,r}^f = \frac{c_{gel}^f}{c_t^f} \% = \frac{c_i^f V_i^f - c_r^f V_r^f}{V_{gel}^f \cdot c_t^f} \%$$

$c_{gel,r}^f$ is the relative protein concentration in the gel, which denotes the percentage ratio of the protein concentration in the gel (c_{gel}^f) to the averaged protein concentration in the total volume of the gel and the protein solutions (c_t^f); c_i^f and c_r^f are the protein concentrations in the initial protein solution and in the leftover protein solution, both calculated by measuring the absorbance at 280 nm; V_i^f , V_r^f , and V_{gel}^f are the volumes of the initial protein solution, the leftover protein solution and the gel after rehydration respectively. Unlike the rehydratable gel that had negligible initial volume, the fresh gel had much larger initial volume ($V_{i,gel}^f$) and therefore $V_{gel}^f \approx V_i^f - V_r^f + V_{i,gel}^f$. As the total amount of protein and water were the same in the fresh gel experiments as that in the rehydratable gel experiments, $c_t^f \approx c_t$.

Experimental

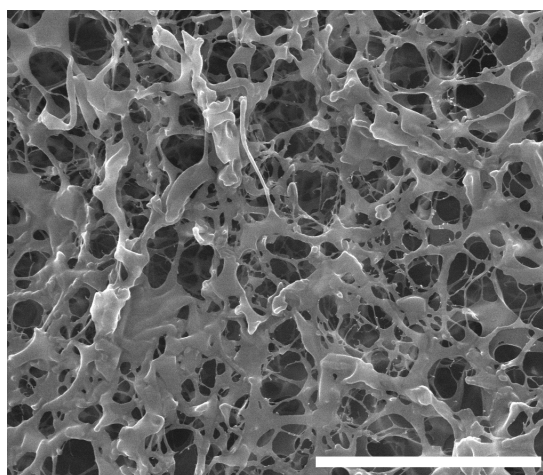


Fig. s1 SEM image of freeze-dried PA gel (scale bar: 5 μ m).

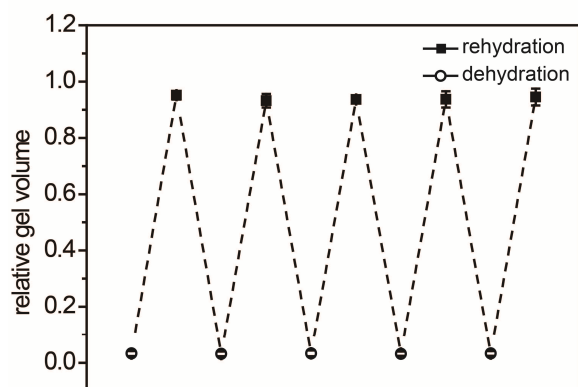


Fig. s2 Relative volume of the gel during the repeated dehydration and rehydration for 5 times.

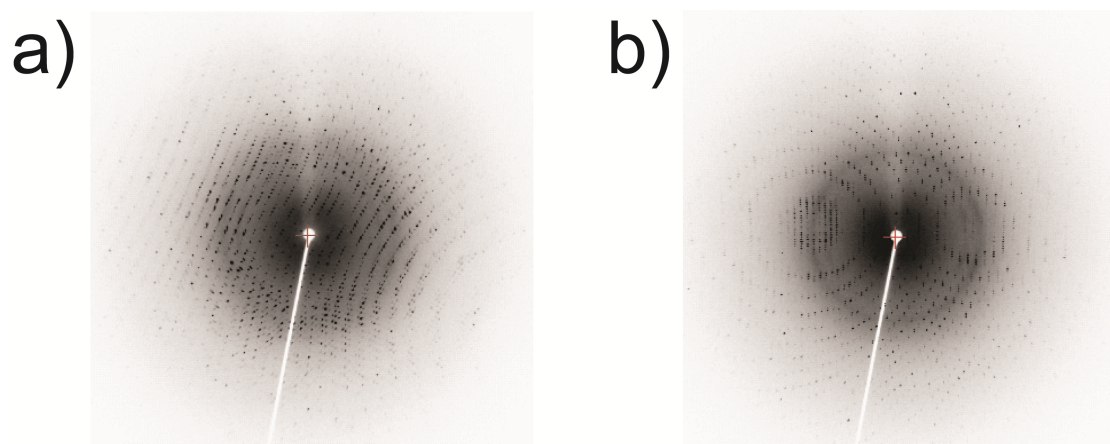


Fig.s3 X-ray diffraction pattern from a crystal of a) lysosyme with a resolution of 1.48 Å and b) thaumatin with a resolution of 1.49 Å.