Nanogel containing electrospun nanofibers as a platform for stable loading of proteins

Asako Shimoda¹, ², Yong Chen³, ⁴ and Kazunari Akiyoshi¹, ²*

¹Department of Polymer Chemistry, Graduate School of Engineering,
²Japan Science and Technology Agency (JST), The Exploratory Research for Advanced Technology (ERATO), Bio-nanotransporter Project, Katsura Int'tech Center, Katsura, Nishikyo-ku, Kyoto 615-8530, Japan.
³Ecole Normale Supérieure, CNRS-ENS-UPMC UMR 8640, 24 rue Lhomond, 75005 Paris, France.
⁴Institute for Integrated Cell-Material Sciences, Kyoto University, Kyoto, 606-8501, Japan

*Corresponding author: Kazunari Akiyoshi

Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University, Katsura, Nishikyo-ku, Kyoto, 615-8510, Japan

Tel.: +81-75-383-2589; Fax: +81-75-383-2590.

E-mail: akiyoshi@bio.polym.kyoto-u.ac.jp
Supplementary Figure S1. Genipin-cross-linked CHPOA/gelatin fibers after soaking in distilled water for one day. Genipin concentrations were 2.2 mM (A) and 0.22 mM (B), respectively. Scale bar = 50 μm.
Supplementary Figure S2. Confocal (A) and STED (B) images of cross-linked POARh/gelatin fibers. Scale bar = 2.5 µm. STED image was deconvolved by Huygens. (C) High magnification image of Supplementary Figure S2B. Scale bar = 500 nm.
Supplementary Figure S3. The effect of genipin concentration on HRP solution with or without CHPOA nanogels. HRP (60 µg/mL) solution was diluted with or without CHPOA nanogel solution (22.2 mg/mL in 10× D-PBS) and was incubated at 37 °C for 24 hr. The samples were heated at 50 °C for 1 hr, and then, genipin in ethanol solution (0.5 or 0.05 mg/mL) was added and incubated for 5 min. The relative HRP activity was measured as described in Experimental Section. The data represents the mean ± the standard deviation, n = 3.
Supplementary Figure S4. Thermal stability of free HRP in PBS at 37 °C. The data represents the mean ± the standard deviation, n = 3.