Inorganic/organic nanocomposite ion gels with well dispersed secondary silica nanoparticles

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SUPPLEMENTARY INFORMATION

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(1) Differential stress–strain curves of inorganic/organic NC and PDMAAm SN ion gels

The differential stress–strain curves of inorganic/organic NC and PDMAAm SN ion gels are shown in Fig. S1.

**Fig. S1** Differential stress–strain curves of the inorganic/organic NC ion gels. SiO$_2$/PDMAAm (weight ratio) = 0 (a), 0.07 (b), 0.11 (c), 0.16 (d), 0.22 (e), and 0.32 (f). Line (a) corresponds to PDMAAm SN ion gel.
(2) TEM image of inorganic/organic DN ion gel

The TEM image of inorganic/organic DN ion gel is shown in Fig. S2.

![Fig. S2 Electron microscopy image of silica particle in inorganic/organic DN ion gel with SiO₂/PDMAAm weight ratio = 0.20.](image)
(3) Photographs of inorganic/organic NC ion gel, inorganic/organic DN ion gel, and PDMAAm SN ion gel

Photographs of inorganic/organic NC ion gel, inorganic/organic DN ion gel, and PDMAAm SN ion gel are shown in Fig. S3.

![Photographs of inorganic/organic NC ion gel, inorganic/organic DN ion gel, and PDMAAm SN ion gel](image)

**Fig. S3** Photographs of inorganic/organic NC ion gel, inorganic/organic DN ion gel, and PDMAAm SN ion gel. The SiO$_2$/PDMAAm weight ratio of the inorganic/organic NC and DN ion gels are 0.22 and 0.20, respectively.
(4) Toughening mechanism of inorganic/organic NC ion gel

The schematics of the estimated network structure of the inorganic/organic NC ion gel are as shown in Fig. S4.

**Secondary silica particle ⇔ PDMAAm chain**

Fig. S4 Schematics of network structure in inorganic/organic NC ion gel.