

## **Description of Additional Supplementary Files**

File Name: **Supplementary Movie 1**

Caption: Anti-freezing ability in liquid nitrogen

File Name: **Supplementary Movie 2**

Caption: Uniaxial stretching of suppressed cryogels and common cryogels

File Name: **Supplementary Movie 3**

Caption: Suppressed cryogels with ultrasoftness, transparency and self-adhesiveness

File Name: **Supplementary Movie 4**

Caption: Instantaneous self-healing of suppressed cryogels

File Name: **Supplementary Movie 5**

Caption: Stretchability of artificial nerve fibers

File Name: **Supplementary Movie 6**

Caption: The working ability of artificial nerve fibers in ultra-low temperature environment