

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: **Shape programming with hand.** A 100 μm PD₁ film is manually shaped into an irregular shape. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 2

Description: **Restoring the film's original shape on a human palm.** A 100 μm PD₁ film returns to its original shape when placed on human hand. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 3

Description: **Manual preparation of an S-shaped column.** A PD₁ column with a diameter of 1 mm is shape-programmed by hand. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 4

Description: **Restoring the original shape of the S-shaped column on human palm.** A 1 mm diameter columnar temporary shape returns to its original shape when placed on human hand. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 5

Description: **Molding a PD1 polymer ring with hand.** A ring with a thickness of 2 mm is manually shaped. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 6

Description: **The process of restoring the original shape of the ring on the hand.** In a human hand, a 2 mm thickness ring with a temporary shape is returned to its original shape. The surface of the hand is roughly 35 °C hot.

File Name: Supplementary Movie 7

Description: **The injection process of a soft robot.** A 14 cm long fiber with a 1 mm diameter was hand-shaped into a straight wire and placed in 20°C water to maintain the temporary shape. It was then placed in a glass tube with a diameter 1.4 mm to maintain its temporary shape before being injected into 37°C water, retaining the original coil shape.