

**Video 1:** Video taken in brightfield transmission mode at 200x magnification of droplets of **M1-MF81**. Upon polymerisation into **E1-MF81** an instant geometry deformation occurred.

**Video 2:** Video taken in brightfield transmission mode at 200x magnification of nematic elastomer microparticles **E1-MF81** in the ten minutes after polymerisation, sped up 64x. Showing the microparticles move to pack more densely.

**Video 3:** Video taken in brightfield transmission mode at 200x magnification of droplets of **M2-MF80**. Upon polymerisation into **E2-MF80** an instant geometry deformation occurred.

**Video 4:** Video taken in brightfield transmission mode at 200x magnification, zoomed, cropped, and sped up 64x showing spindle shaped particles of **E1-MF81** undergoing a reversible shape change during a second heat/cool cycle from 25 – 140 – 40 °C, controlled at 10 °C/min.

**Video 5:** Video taken in brightfield transmission mode at 200x magnification, zoomed, cropped, and sped up 64x showing spindle shaped particles of **E2-MF80** undergoing a reversible shape change during a second heat/cool cycle from 25 – 140 – 40 °C, controlled at 10 °C/min.

**Video 6:** Video taken in brightfield transmission mode at 200x magnification of droplets of **M1-MF83** after being aligned on three stacked N42 bar magnets where the magnetic field was aligned vertical (↑) with respect to the video. Upon polymerisation into **E1-MF83** an instant geometry deformation occurred in the direction of the magnetic field.

**Video 7:** Video taken in brightfield transmission mode at 200x magnification of droplets of **M2-MF89** after being aligned on three stacked N42 bar magnets where the magnetic field was aligned vertically (↑) with respect to the video. Upon polymerisation into **E2-MF89** an instant geometry deformation occurred in the direction of the magnetic field.

**Video 8:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E1-MF85** after being placed on a N42 ring magnet where the magnetic field was aligned horizontal (→) with respect to the video. Particles aligned with the magnetic field.

**Video 9:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E1-MF85** on top of a N42 ring magnet where the magnetic field was rotated 90 ° to be vertical (↑) with respect to the video. Particles rotated to align with the magnetic field.

**Video 10:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E1-MF97** on top of a N42 ring magnet where the magnetic field was rotated 180 ° to be vertical (↓) with respect to the video. Particles did not rotate 180° with the magnetic field.

**Video 11:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E2-MF88** after being placed on a N42 ring magnet where the magnetic field was aligned vertical (↑) with respect to the video. Particles aligned with the magnetic field.

**Video 12:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E2-MF88** on top of a N42 ring magnet where the magnetic field was rotated 90 ° to be horizontal (→) with respect to the video. Particles rotated to align with the magnetic field.

**Video 13:** Video taken in brightfield transmission mode at 200x magnification and sped up 64x showing spindle shaped particles of **E2-MF88** on top of a N42 ring magnet where the magnetic field was rotated 180 ° to be horizontal (←) with respect to the video. Spindle shaped particles did not rotate 180° with the magnetic field, however crescent shaped ones did rotate with the magnetic field.