

# **Fabrication of dual-functional composite yarns with a nanofibrous envelope using high throughput AC needleless and collectorless electrospinning**

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## **Supplementary Information:**

Supplementary information 1 – The nanofibre plume produced by the AC spinning method.

Supplementary information 2 – The nanofibre plume produced by the AC spinning method; high-speed camera recording.

Supplementary information 3 – The nanofibre plume wrapping around the ballooning yarn core.

Supplementary information 4 – The nanofibre plume wrapping around the ballooning yarn core; high-speed camera recording.

Supplementary information 5 – The process of the nanofibrous plume wrapping around the ballooning yarn core, documenting its partial elasticity; video recording from a high-speed camera.

Supplementary information 6 – Ballooning core of the yarn when the yarn stress is changing.

Supplementary information 7 – The ballooning yarn core; high-speed camera recording.

Supplementary information 8 – The ballooning yarn core being enwrapped by a plume of nanofibres when the yarn stress is changing.