

Supporting Information

A General in Situ Deposition Strategy for Synthesis of Janus Composite Fabrics with $\text{Co}(\text{CO}_3)_{0.5}\text{OH}\cdot 0.11\text{H}_2\text{O}$ Nanoneedles for Oil-Water Separation

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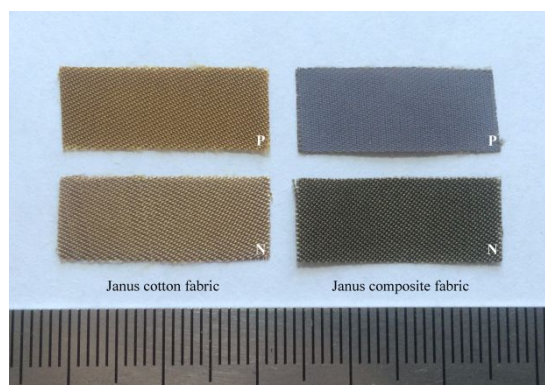


Figure S1. Optical images of the hydrophilic side (P) and the hydrophobic side (N). Left: Janus cotton fabric, Right: Janus composite fabric.

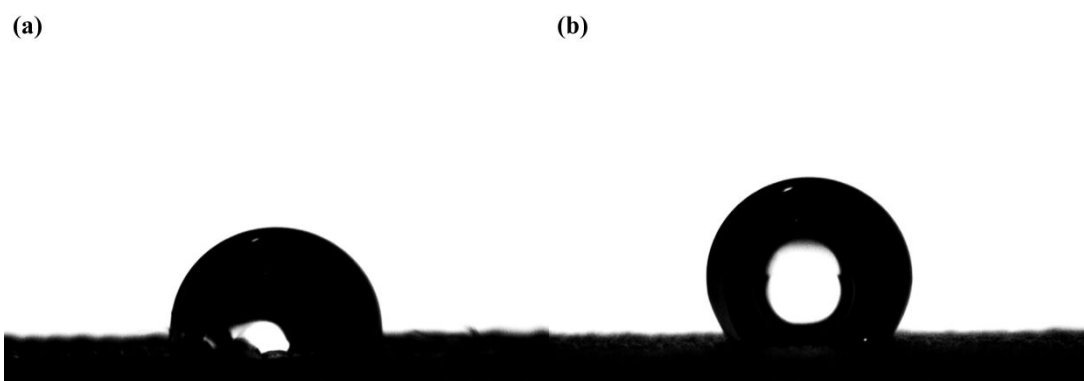


Figure S2. The initial contact angles for both sides of the Janus cotton fabric. a) 85° for the hydrophilic side and b) 119° for the hydrophobic side.

(a)

(b)



Figure S3. The initial contact angles for the hydrophilic side of a) Janus cotton fabric and b) corresponding Janus composite fabric. Oxidation time: 2 h.

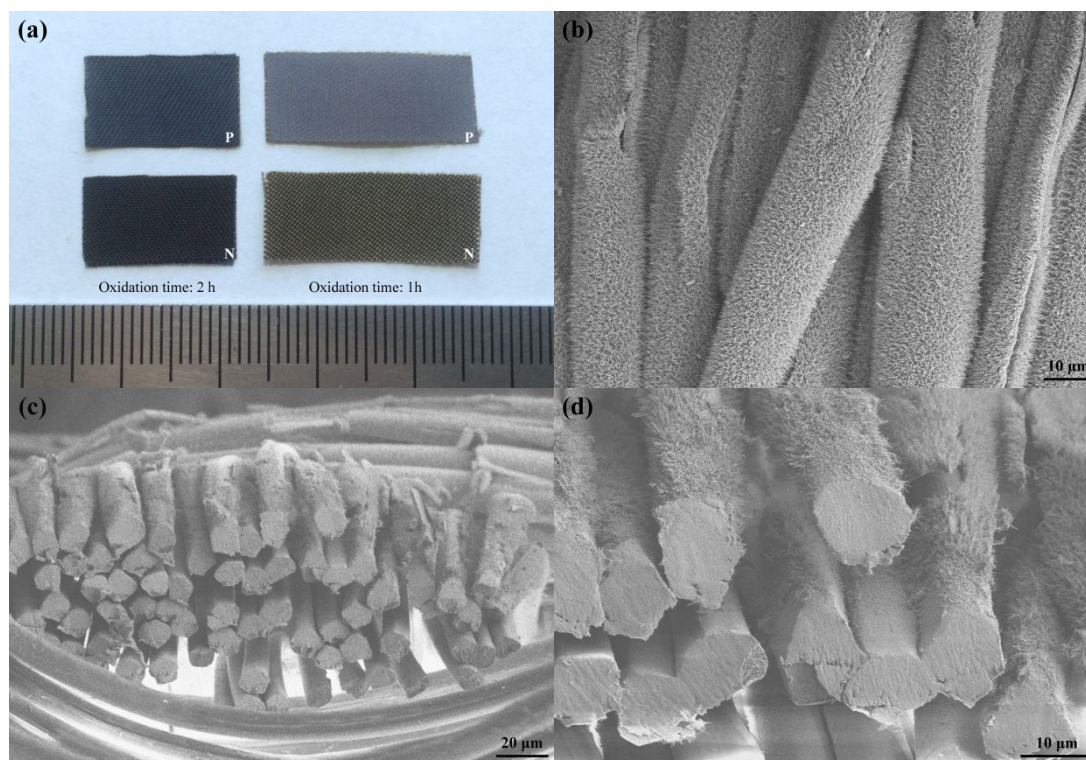


Figure S4. a) Photograph images of the Janus composite fabrics for different oxidation time. b) top-view image and c) and d) side-view images of the Janus composite fabric with 2 h oxidation time.

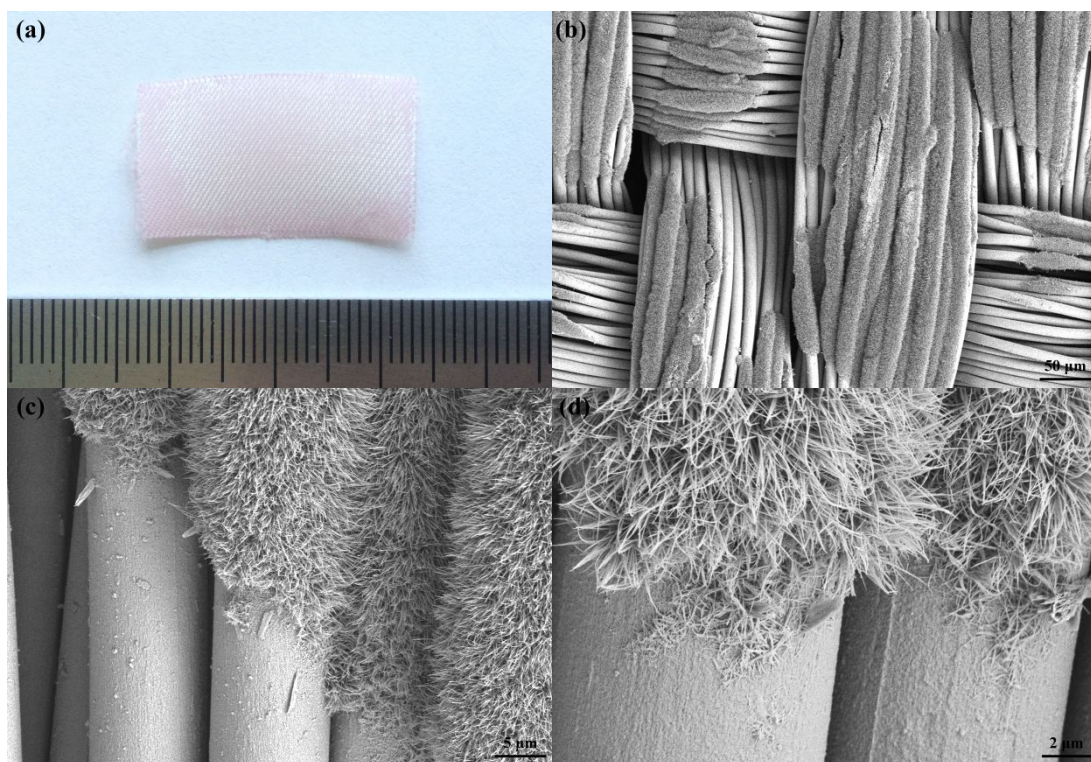


Figure S5. a) Photograph image of the composite fabric. b), c) and d) SEM images of the composite fabric.

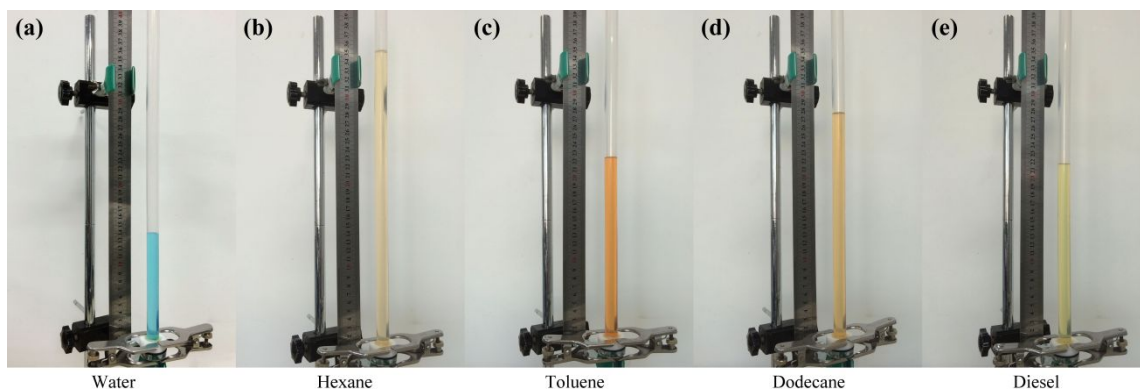


Figure S6. The height of a) water column, b) hexane column, c) toluene column, d) dodecane column and f) diesel column supported by the Janus composite fabric.

Movie Captions

Movie S1: Dynamic behavior of a water droplet on the Janus composite fabric with 1 h oxidation time.

Movie S2: Dynamic behavior of a water droplet on the Janus composite fabric with 2 h oxidation time.

Movie S3: The transmission process of dichloromethane through the Janus composite fabric and the pristine cotton fabric. The hydrophilic side of Janus composite fabric is fixed upward.

Movie S4: The transmission process of dichloromethane through the Janus composite fabric with oil-broken water channel and the pristine cotton fabric. The hydrophilic side of Janus composite fabric with oil-broken water channel is fixed upward.

Movie S5: The transmission process of water through the Janus composite fabric and the pristine cotton fabric. The hydrophobic side of Janus composite fabric is fixed upward.

Movie S6: The separation process of light oil-water mixture. The hydrophobic side of Janus composite fabric is fixed upward.

Movie S7: The separation process of heavy oil-water mixture. The hydrophilic side of Janus composite fabric is fixed upward.

Movie S8: The continuous oil-water separation process by T-shape apparatus.