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Superhydrophobic silicone fiber mats fabricated by electrospinning from solution BONNIE LUDWIG, ANETA CLARK, STEVEN SNOW, RANDAL HILL, RANDALL SCHMIDT, BRAD FOGG, PETER LO, Dow Corning Corporation — Fine silicone fibers of 1 – 20 μm diameter were fabricated from solution via electrospinning. These are the first examples of fine fibers prepared from silicone homopolymers. Fiber morphology (beaded, ribbon-like, smooth) and diameter were controlled. The nanoscale surface roughness of nonwoven fiber mats created with silicone fibers produced a superhydrophobic surface that had a water contact angle of $\sim 160^o$. The superhydrophobic surface was made reversibly hydrophilic with exposure to oxygen plasma. The combination of high surface area and superhydrophobicity suggests potential applications in the areas of water-repellent textiles, filtration, adsorption and chemical separations, wound dressings, and fuel cells.

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