# Supporting Information

## Bioinspired Photocatalytic Shark Skin Surfaces with Antibacterial and Antifouling Activity via Nanoimprint Lithography

*Feyza Dundar Arisoy*[†], *Kristopher W. Kolewe*[‡], *Benjamin Homyak*[†], *Irene S. Kurtz*[‡], *Jessica D. Schiffman*[‡], *James J. Watkins**[†]

[†]Department of Polymer Science and Engineering, [‡]Department of Chemical Engineering, University of Massachusetts Amherst, Amherst, Massachusetts 01003, United States

*E-mail: watkins@polysci.umass.edu

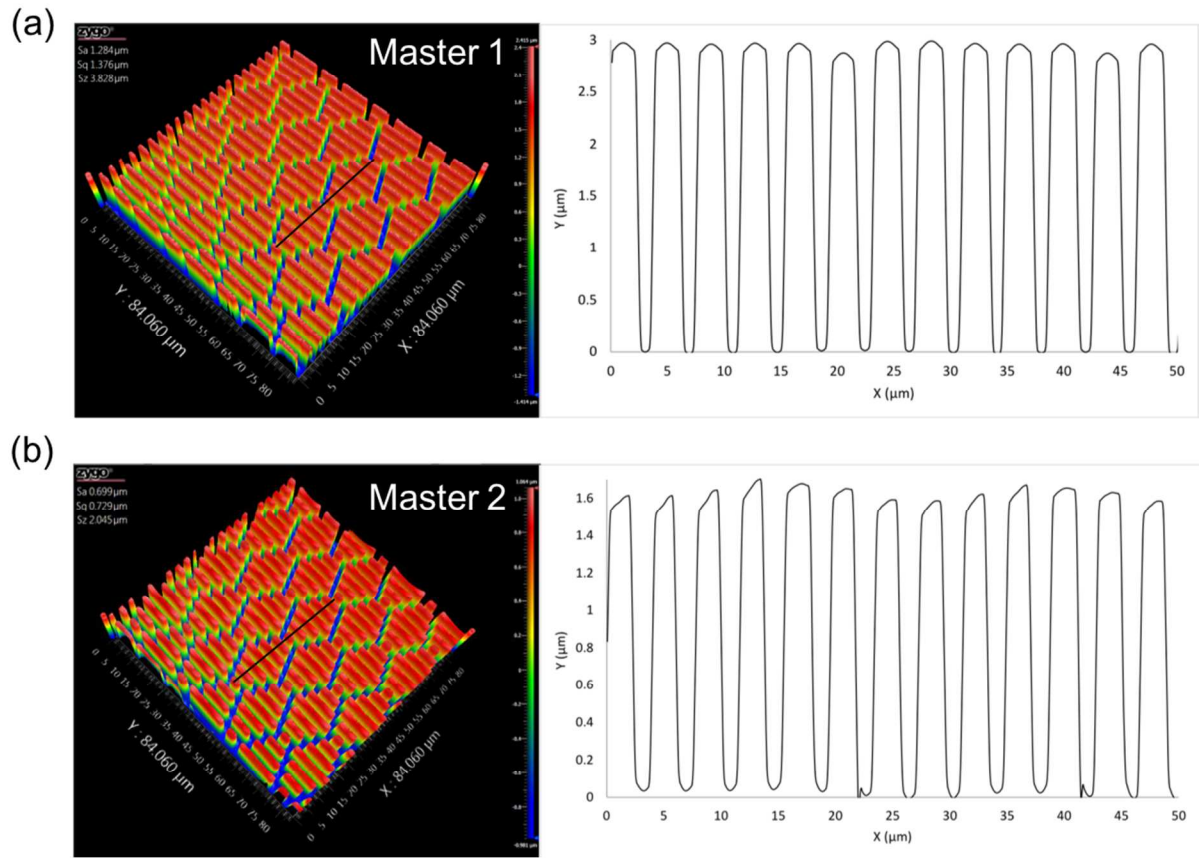


**Figure S1**: Optical profilometry images and dimensions of **(a)** *Master 1* (nickel mold) and **(b)** *Master 2* ($TiO_2$-50 mold).

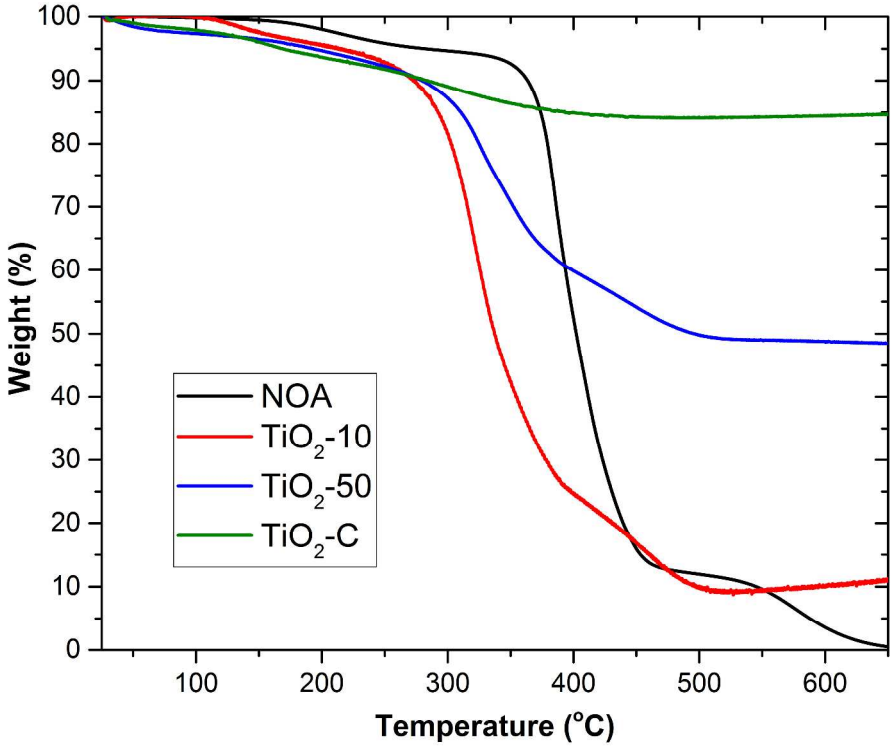


**Figure S2.** TGA of NOA, $TiO_2$-10, $TiO_2$-50, and $TiO_2$-C.

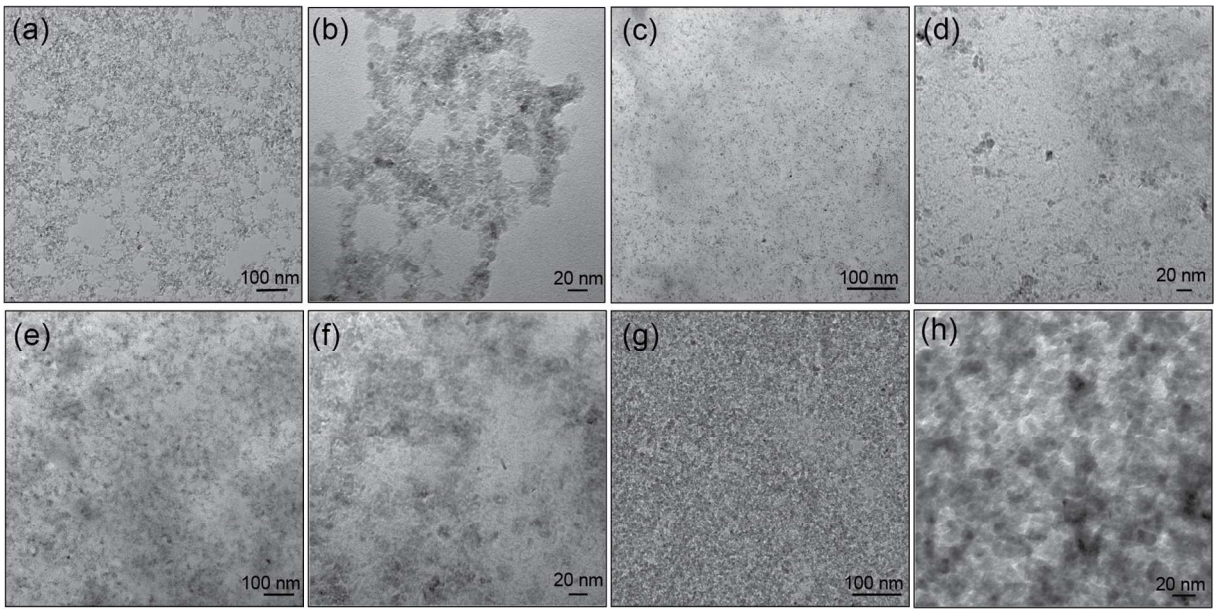


**Figure S3.** TEM images of low and high magnifications **(a, b)** $TiO_2$ NPs (drop casted from solvent exchanged $TiO_2$ (NMP/MeOH) dispersion), as well as the **(c, d)** $TiO_2$-10, **(e, f)** $TiO_2$-50, **(g, h)** $TiO_2$-C composite films.

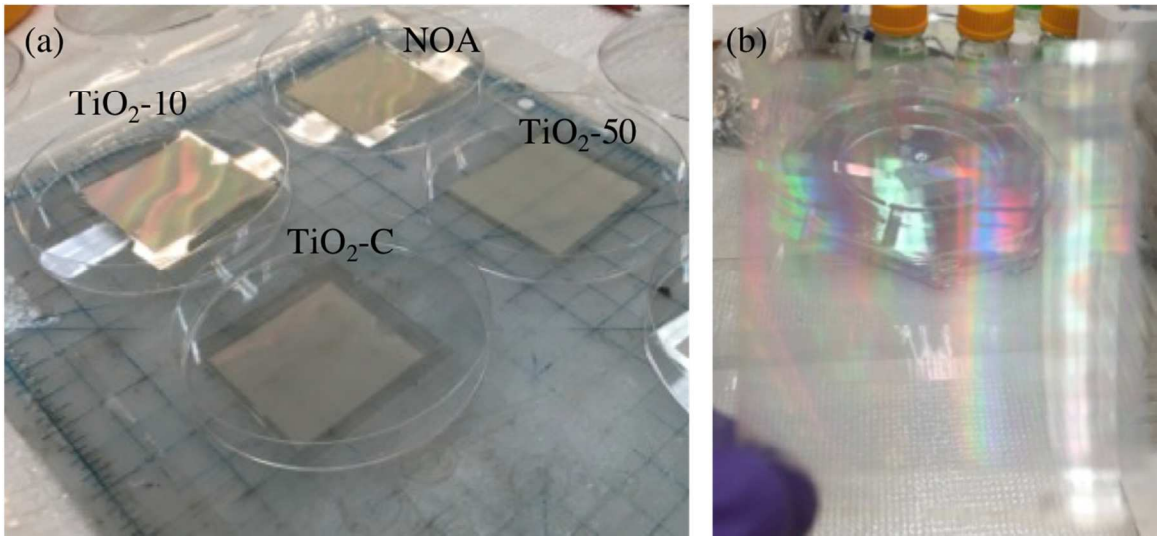


**Figure S4. (a, b)** Digital photos of NOA, $TiO_2$-10, $TiO_2$-50, and $TiO_2$-C shark skin patterns on a PET substrate (4 cm × 4 cm).

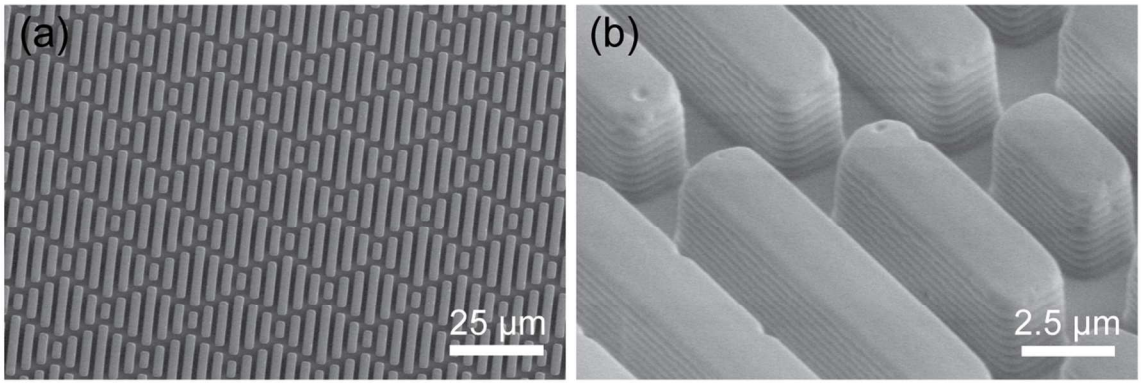


**Figure S5.** SEM micrographs of NOA* (100% NOA) shark skin surfaces as a control patterned surface **(a)** top view, **(b)** 45° tilted. Imprints were conducted using a PDMS mold from *Master 1* (height: 3 µm, width: 2 µm, pitch: 4 µm).

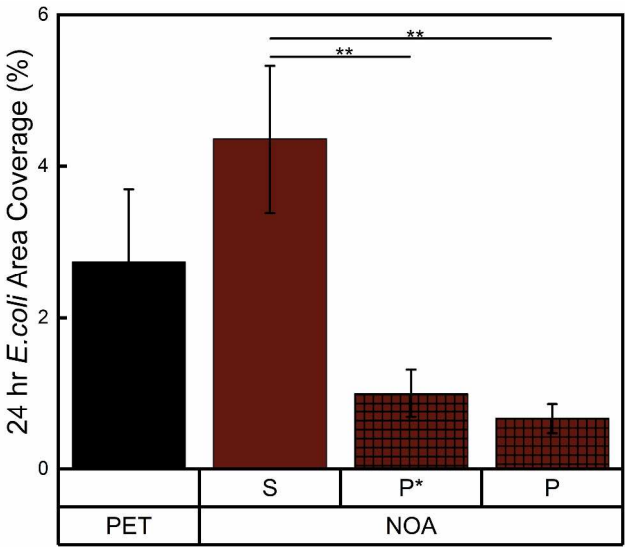


**Figure S6.** The total area coverage of surface-adhered *E. coli* on smooth (S) and patterned (P) NOA surfaces, as well as on PET controls. The dimensions of NOA (P) surfaces are height: 1.6 µm, width: 1.3 µm, and spacing: 2.7 µm, whereas NOA* ($P^*$) dimensions are height: 3 µm, width: 2 µm, and spacing: 2 µm. Two asterisks (**) indicates that values are significantly different at 0.01 level. Standard error is provided.

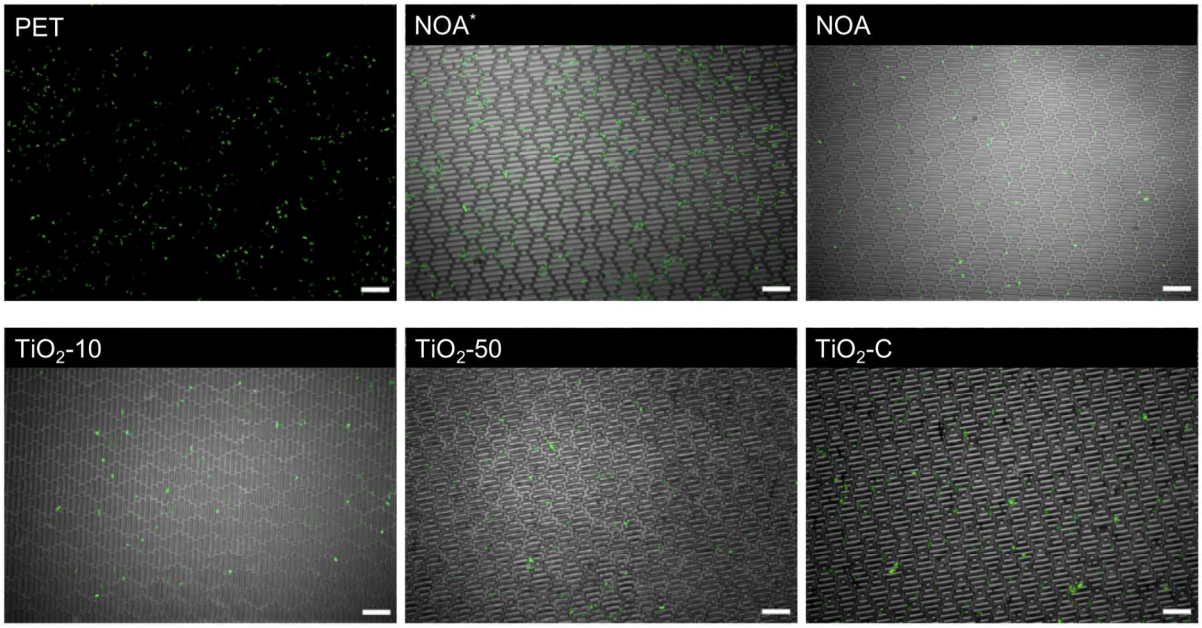


**Figure S7.** Fluorescent micrographs show that *E. coli* adhered between the patterned features. All scale bars are 20 μm.