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Is micro-nano texture the only reason for under-water superoleophobicity of fish scale? NAGA SIVA KUMAR GUNDA, PRASHANT WAGHMARE, SUSHANTA MITRA, Department of Mechanical Engineering, University of Alberta — There is a huge surge in developing liquid repellant surfaces based on the micro/nanostructures that are inherently present in nature, like the one in case of fish scales. Through systematic contact angle measurement of oil drops on fish scales submerged in souring water medium, we have demonstrated that the superhydrophobic/superoleophobic nature of fish scales is attributed to a combination of the mucus layer and the hierarchical structures. The mucus layer on the fish scales produces an unprecedented contact angle close to 180^{o} in contrast to the contact angle of 150^{o} produced in the absence of the mucus layer. We have also identified, through FTIR analysis, that the distinct chemical signatures of mucus accountable for such large contact angles.

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