

Abstract Submitted  
for the CUWIP22 Meeting of  
The American Physical Society

**Switchable Wettability of Laser Ablated Brass for use in Oil/Water Separation**<sup>1</sup> CASSIE STOFFER, MICHAELA KLEINERT<sup>2</sup>, Willamette University — The pressing issue of cleaning up oil spills has created a demand for an efficient, affordable, and environmentally-friendly method of separating oil and water. Fine meshes made of laser ablated brass have the potential to achieve this goal. The surface chemistry and morphology of brass are altered when it is ablated with a laser, resulting in hydrophobic and oleophilic properties that allow this material to effectively separate oil and water. We change the wettability of laser ablated brass from hydrophobic/oleophilic to hydrophilic/oleophobic by altering the surface chemistry of the brass via heat treatment at 300°C. The wettability of brass is switched back to its original hydrophobic/oleophilic state as the heated sample is exposed to air and a partial deoxidation occurs on the surface. The change in wettability is quantified using a goniometer: a newly improved instrument that allows us to accurately measure the advancing and receding contact angles of a droplet of water on a brass surface. Future project improvements include altering the switchable wettability cycle to improve time efficiency. This simple switchable wettability process can be used to create brass meshes that can be cleaned, recovered, and reused many times for optimized oil/water separation.

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Date submitted: 11 Jan 2022

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