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**Electrospun polylactic acid/ tungsten oxide/ amino-functionalized carbon quantum dots (PLA/WO3/N-CQDs) fibers for oil/water separation and photocatalytic decolorization**

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**Abstract**
Oily wastewater generated from various industrial processes and oil spillages is a massive threat to the environment and human health. Hence, it is essential to develop novel material for practical oil/water separation and recovery. By incorporating WO3 (tungsten oxide)/ N-CQDs (amino-functionalized carbon quantum dots) into the matrix of polymer, the alteration of wettability behavior of electrospun PLA fiber is reported in this present work. The modified PLA/WO3/N-CQDs fibers shows a significantly enhanced hydrophobicity of the fibers while maintaining surface super-oleophilicity. These behaviors are achieved by modifying the surface contact angle and surface morphology of the composite PLA fiber using WO3/N-CQDs as filler. The PLA/WO3/N-CQDs EDA fiber exhibits the highest water contact angle (WCA) at 132.37º, oil absorption capacity at 35.752 g/g for n-hexane, oil separation performance at 8,326.048 L m−2 h−1 for n-hexane and 11,961.364 L m−2 h−1 for n-heptane, and decolorization of methylene blue (MB) at 91.80%. Additionally, the PLA/WO3/N-CQDs EDA fiber demonstrated an excellent separation performance and durability after ten times cyclic separation performance test. This present study contributes to a potential application in the field of oily wastewater treatment. © 2021 Elsevier Ltd

**Author Keywords**
Adsorption; Contact angle; Fiber preparation; Oil/water separation; Porous fiber

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