Supplemental Information

Anaerobic Biodegradation and Decolorization of Refractory Acid Dye by a Forward Osmosis Membrane Bioreactor

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Supplemental Information: 6 figures.

GC-MS Methods:

-*GC 7890A*

Column: Agilent DB-5MS

Injection Temperature: 280 ºC

Injection Mode: Split

Carrier Gas: He

Linear Velocity: 1.0 ml/min

Injection volume: 1.0 μL

Column Temperature: 40 ºC (4 min)-8℃/min-300℃ (15min)

-*MS 5975C*

Ion Source Temperature: 230 ºC

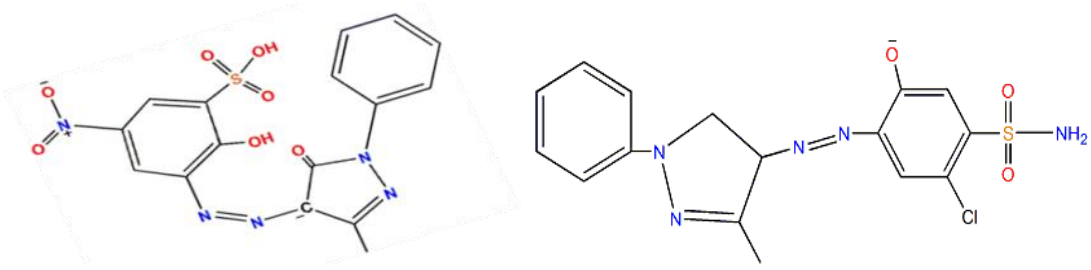
Interface Temperature: 250 ºC

Ionization Mode: EI

Electron Energy:70 eV

Acq. Mode: Scan

Scan Range: *m/z* 30-1000



(a) (b)

Figure S1. Chemical structure of *Lanaset RED G.GR* (a) 80% mass percent (b) 20% mass percent (provided by the manufacturer).

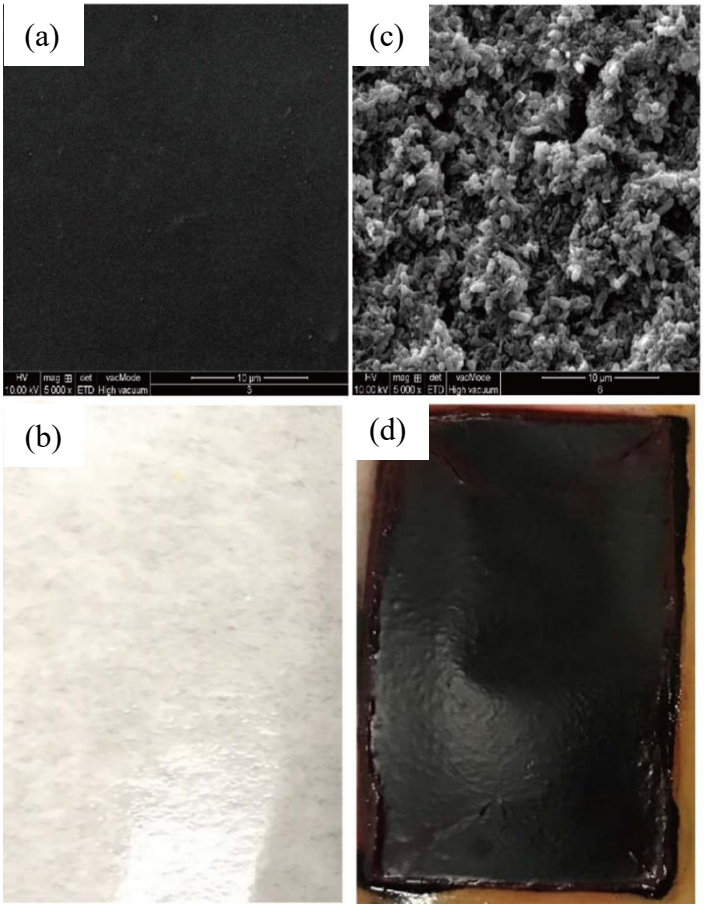


Figure S2. SEM images and digital pictures of pristine (a,b) and fouled (c,d) CTA FO membranes.

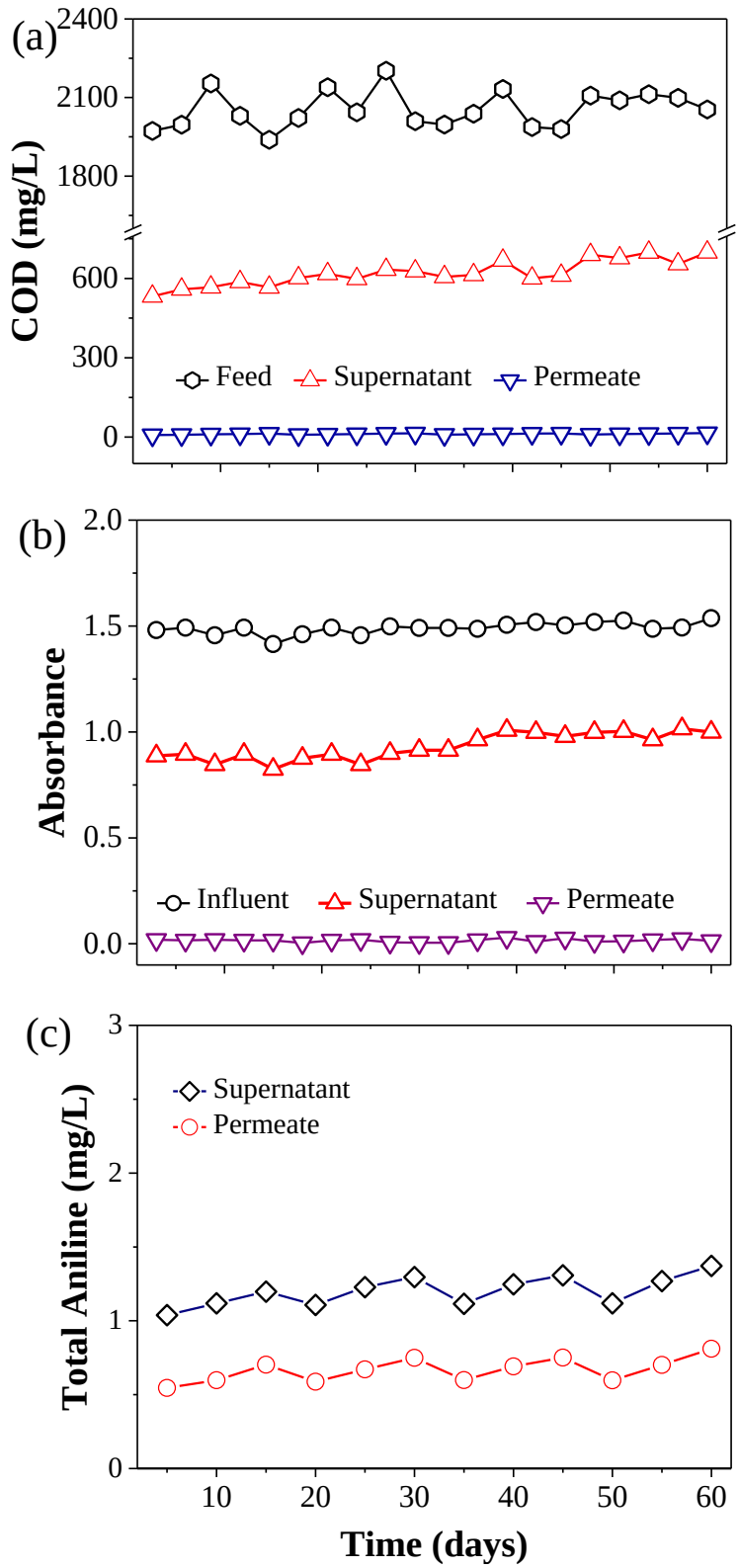


Figure S3. Performance of the OMBR for dye removal. The dye treatment performance as a function of time. (a) COD removal, (b) color removal, (c) aniline removal. The FO removal was determined by the comparison between feed and permeate, and the biological removal was determined by the comparison of feed and supernatant.

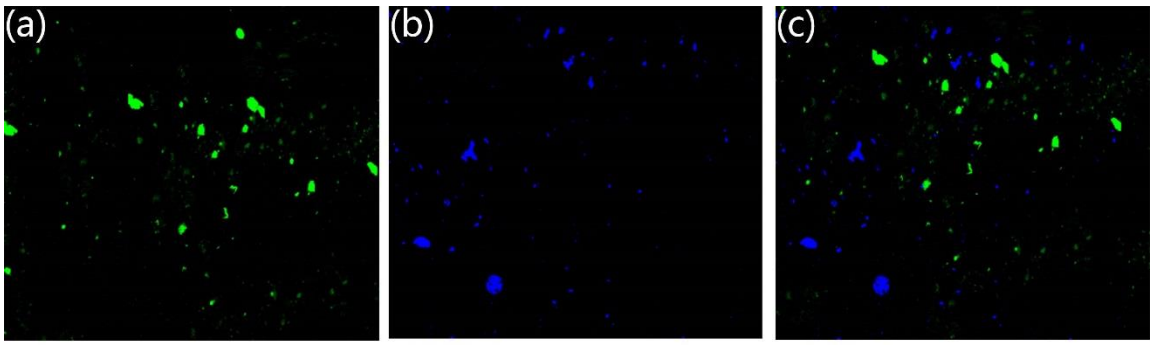


Figure S4. Fluorescent microscope labeling characterizations of a fouled FO membrane surface: a) protein distribution, b) β-polysaccharide distribution, c) overlapping distribution of protein and β-polysaccharide.

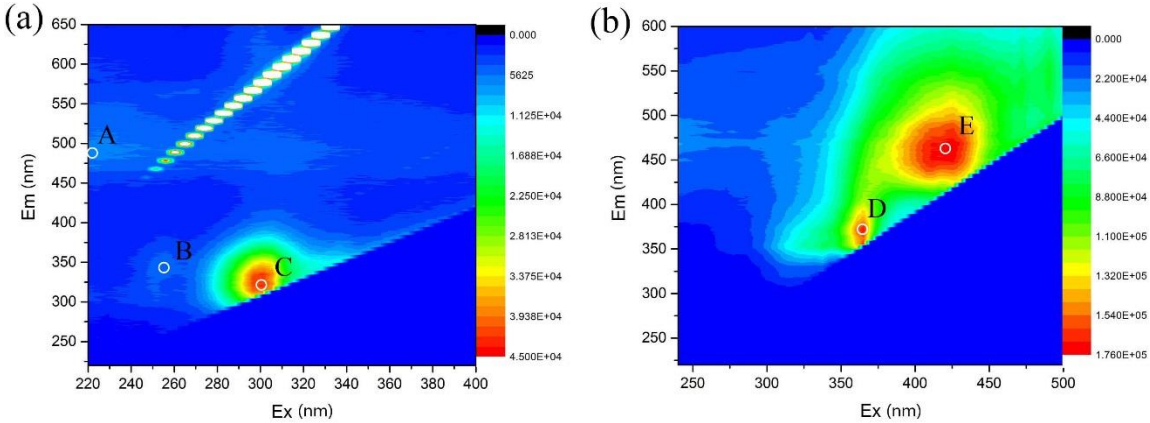


Figure S5. EEM fluorescence spectra of EPS of the cake layer on the FO membrane surface.

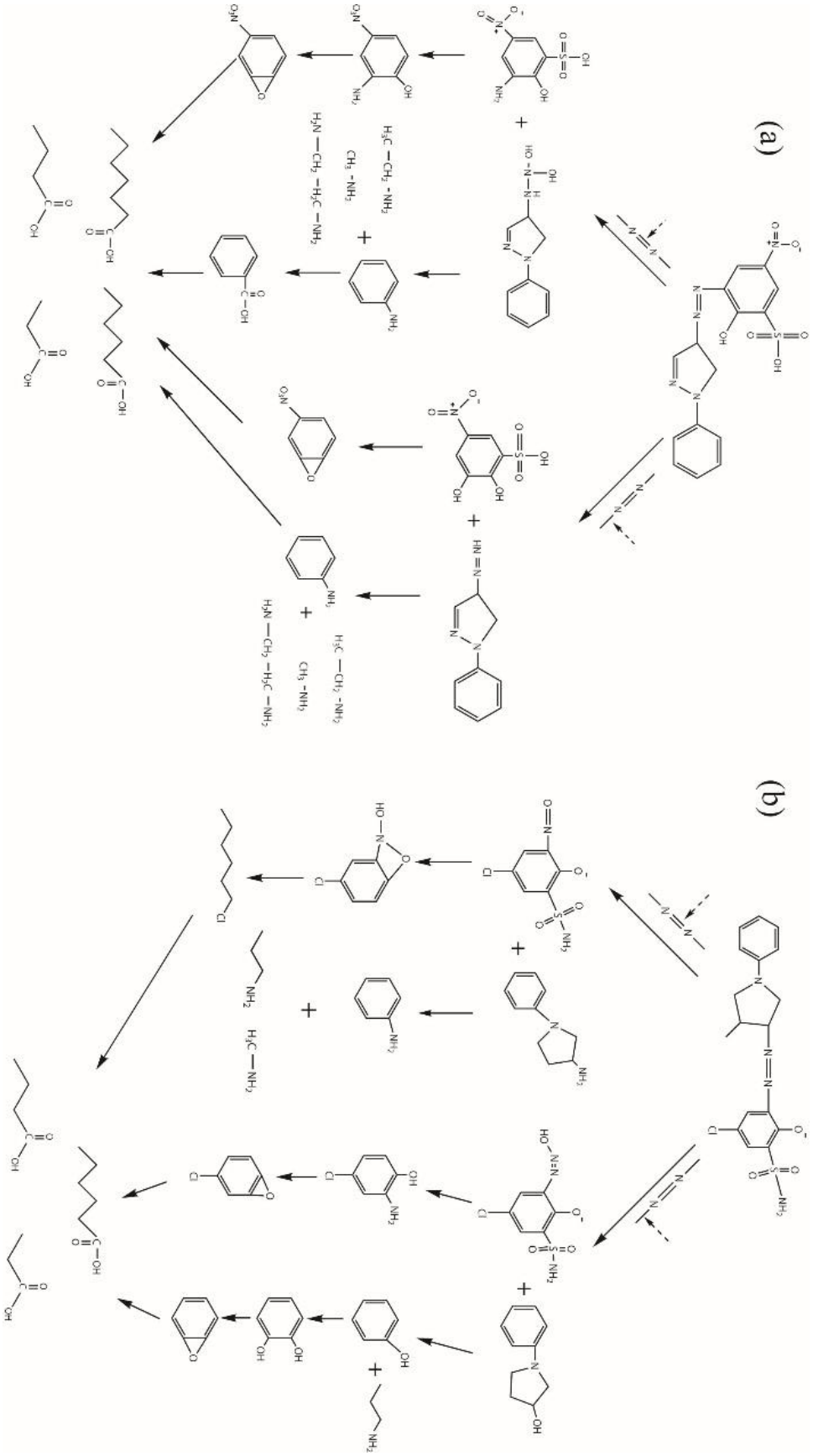


Figure S6. Proposed Anaerobic degradation pathway of *Lanaset red G.GR*.