membranes

MDPI

Supplementary material

Effects of Different TiO_2/CNT Coatings of PVDF Membranes on the Filtration of Oil-Contaminated Wastewaters

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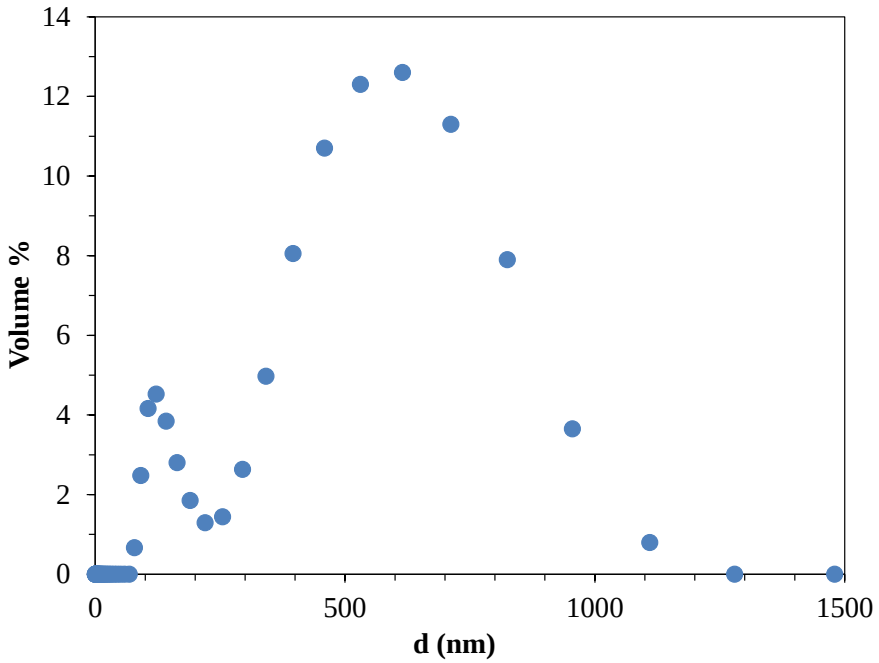

Figure S1. Oil droplet size distribution of the used oil emulsion.

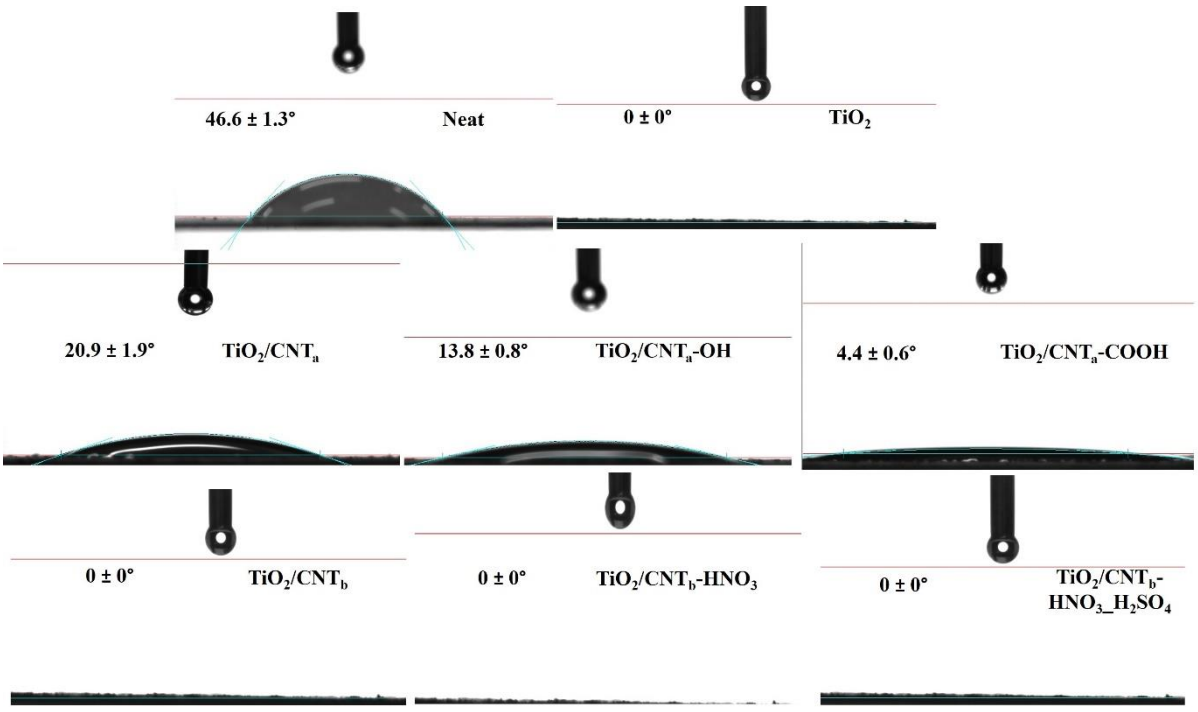

Figure S2. Water droplets on the different membrane surfaces and the measured contact angles (before the filtration of the oil emulsions).

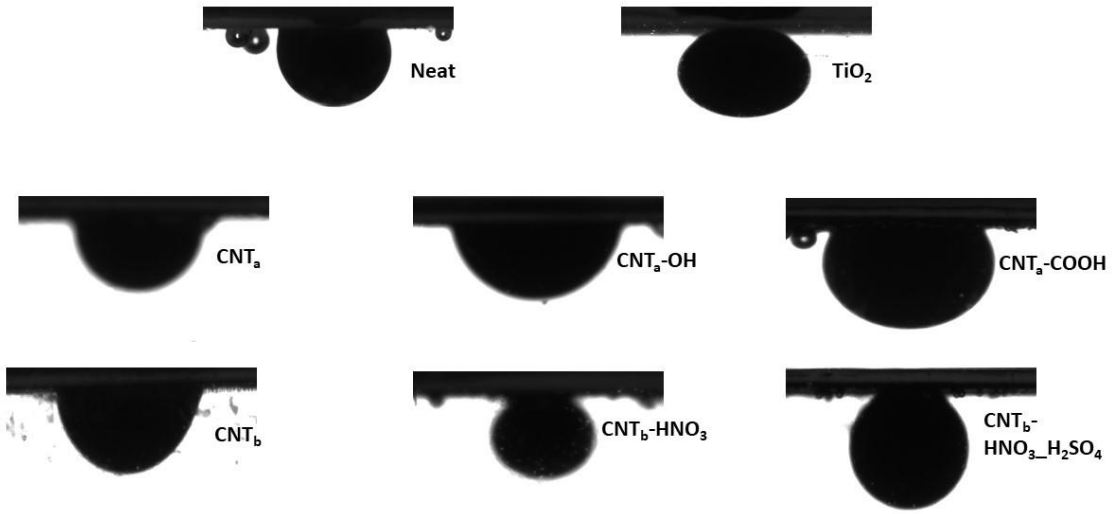

Figure S3. Underwater oil droplets on different membrane surfaces.

Table S1. Unique components detected exclusively in sample 1 crude oil (analyzed by GC-MS).

17-Pentatriacontene
1-Iodoundecane
1-Nonadecene
2-Amino-1-(o-methoxyphenyl)propane
2-Bromo dodecane
2-Furanmethanamine, tetrahydro-

3,3,7,7-Tetramethyl-5-oxa-1,9-diazabicyclo[4.3.0]non-8-ene
3,5-Dimethyldodecane
4-Chloro-6-phenylpyrimidine-1-oxid
6-Amino-hex-2-en-1-ol
Anthracene
Anthracene, 1-methyl-
Benzene, 1,3-bis(3-phenoxyphenoxy)
Cyclobutene-3,4-dione, 1-dimethyla
Cyclohexane, (1-hexyltetradecyl)-
Cyclohexane, 1,1'-(1,3-propanediyl)bis-
Cyclohexane, decyl-
Dibenzothiophene, 3-methyl-
Dodecane, 2,6,10-trimethyl-
Dodecane, 2-methyl-8-propyl-
Eicosanoic acid, hexadecyl ester
Heneicosane
Heptadecane, 3-methyl-
Heptadecane, 9-octyl-
Hexadecane, 1-iodo-
Hexadecane, 4-methyl-
Naphthalene, 1-(2-propenyl)-
Naphthalene, 1,3-dimethyl-
Naphthalene, 2,3,6-trimethyl-
Nonadecane, 2,6,10,14,18-pentamethyl-
Nonadecane, 4-methyl-
Octacosyl acetate
Octadecane, 1-chloro-
Octadecane, 1-iodo-
Octane, 2,6-dimethyl-
Pentacosane
Pentadecane, 4-methyl-
Pentadecane, 8-hexyl-
Phenanthrene, 2,5-dimethyl-
Tetradecane, 3-methyl-
Tetradecane, 6,9-dimethyl-
Triacontane
Tridecane, 1-iodo-

35

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Table S2. Unique components detected exclusively in sample 2 crude oil (analyzed by GC-MS).

1,1'-Biphenyl, 4-methyl-
10-Methylnonadecane
1-Docosene
1H-Indene, 2,3-dihydro-4,7-dimethyl-
3-Hexene, 3-ethyl-2,5-dimethyl-
Benzene, (1,1-dimethylpropyl)-
Benzene, 1,2,3,5-tetramethyl-
Benzene, 1,2,3-trimethyl-
Benzene, 1-chlorodifluoromethoxy-4-nitro-
Benzene, 1-methyl-3-propyl-
Benzene, 1-methyl-4-(1-methylethyl)-
Benzene, 2-ethyl-1,4-dimethyl-
Cyclohexane, 1-ethyl-2-methyl-, cis-
Cyclohexane, butyl-
Cyclohexane, pentyl-
Cyclohexane, undecyl-
Cyclopentane, (1-methylethyl)-
Cyclopentane, 1-butyl-2-pentyl-
Cyclopropane, 1-methyl-1-(2-methylpropyl)-2-nonyl-
Decane
Decane, 2-methyl-
Decane, 3,7-dimethyl-
Decane, 3-methyl-
Decane, 4-methyl-
Decane, 5-methyl-
Docosane
Docosane, 11-butyl-
Dodecane, 2-methyl-6-propyl-
Dodecane, 4-methyl-
Heptacosane, 1-chloro-
Heptadecane, 2,6,10,14-tetramethyl
Hexacosane
Hexadecane, 2-methyl-
Naphthalene
Naphthalene, 1,4,6-trimethyl-
Naphthalene, 1,4-dimethyl-
Nonane, 5-butyl-
Pentadecane, 2,6,10-trimethyl-
Pentadecane, 3-methyl-
Pentadecane, 7-methyl-
Tetradecane
Tetradecane, 4,11-dimethyl-
Tridecane, 3-methyl-
Tridecane, 5-methyl-
Tridecane, 7-methyl-
Undecane
Undecane, 2-methyl-
Undecane, 3-methyl-
Undecane, 4-methyl-
Undecane, 6-methyl-