Supplementary Information for

Zeolite-coated mesh film for efficient oil-water separation

Qiang Wen[a §], Jiancheng Di[a §], Lei Jiang[b], Jihong Yu[a]* and Ruren Xu[a]

[a] *State Key Laboratory of Inorganic Synthesis and Preparative Chemistry, Jilin University, Qianjin Street 2699, Changchun 130012, China P.R. Fax: +86-431-8516-8608; Tel: +86-431-8516-8608; E-mail: jihong@jlu.edu.cn*

[b] *School of Chemistry and Environment, Beihang University, Beijing100191, China P.R.*

Experimental section

Materials

Tetra-n-propylammonium hydroxide (TPAOH, 40 wt %) was purchased from Alfa Aesar. Tetra-n-propylammonium bromide (TPABr) was from J&K chemical Co. Petroleum ether, cyclohexane, tetraethylorthosilicate (TEOS) and potassium hydroxide (KOH) were from Beijing fine chemical Co., Ltd. Soyabean oil and diesel were commercially available. Crude oil was supplied by Daqing Oilfield Limited Company. All reagents were used as received without further purification.

Characterization

SEM images were measured with JEOL FE-SEM 6700F microscopy. Water contact angles (CAs) and oil contact angles (OCAs) were measured on a Dataphysics OCA20 contact-angle system at ambient temperature and each was obtained by measuring more than five different positions on the same sample. X-ray powder diffraction (XRD) patterns were recorded on a Rigaku D/MAX 2500 diffractometer with CuKα radiation (λ = 1.5418Å). The oil content in the collected water after separation process was measured by the infrared spectrometer oil content analyzer (CY2000, China).

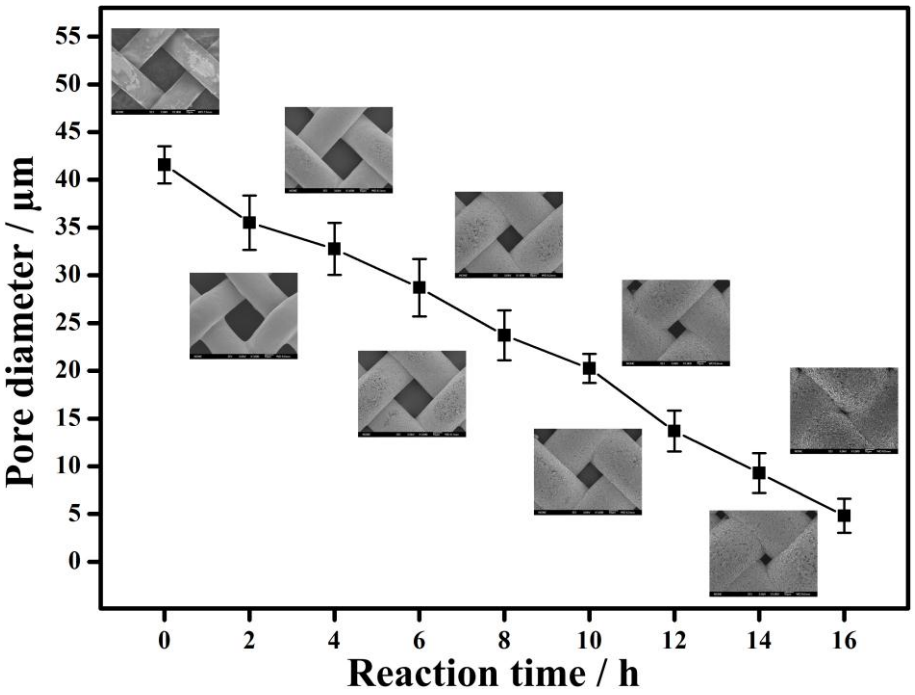

Fig. S1 Curve of pore diameters of the as-prepared silicalite-1 membrane changed with the crystallization time. The insets are the corresponding SEM images.

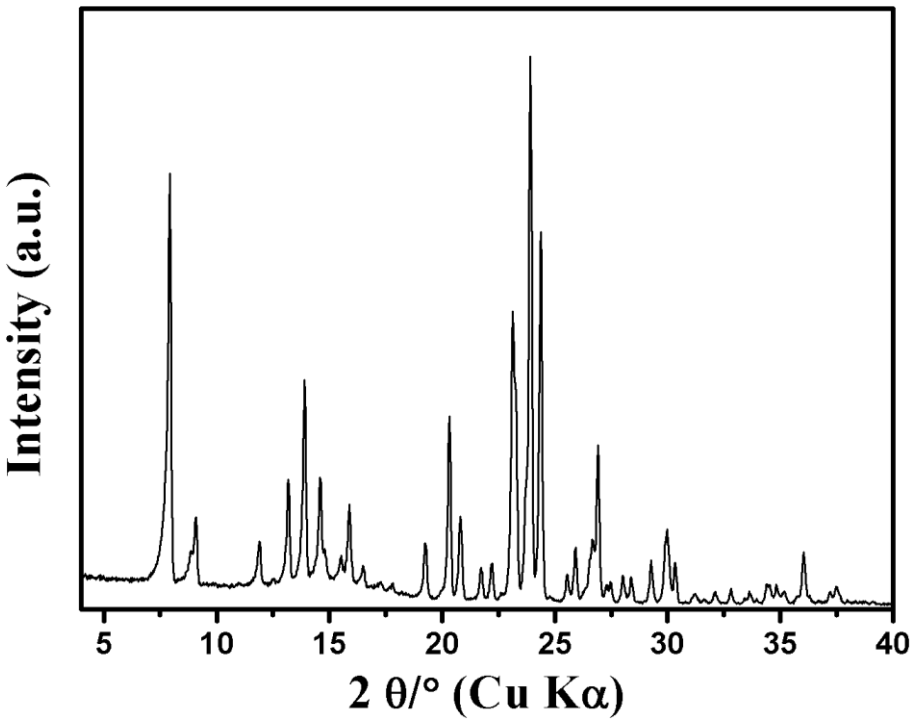

Fig. S2 XRD pattern of the ZCMF-12, characteristic of highly crystalline silicalite-1.

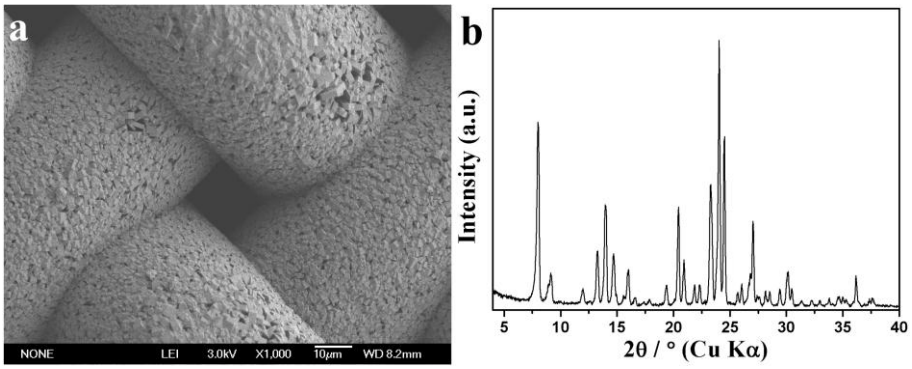

Fig. S3 (a) SEM image and (b) XRD pattern of ZCMF-12 after corrosion test.