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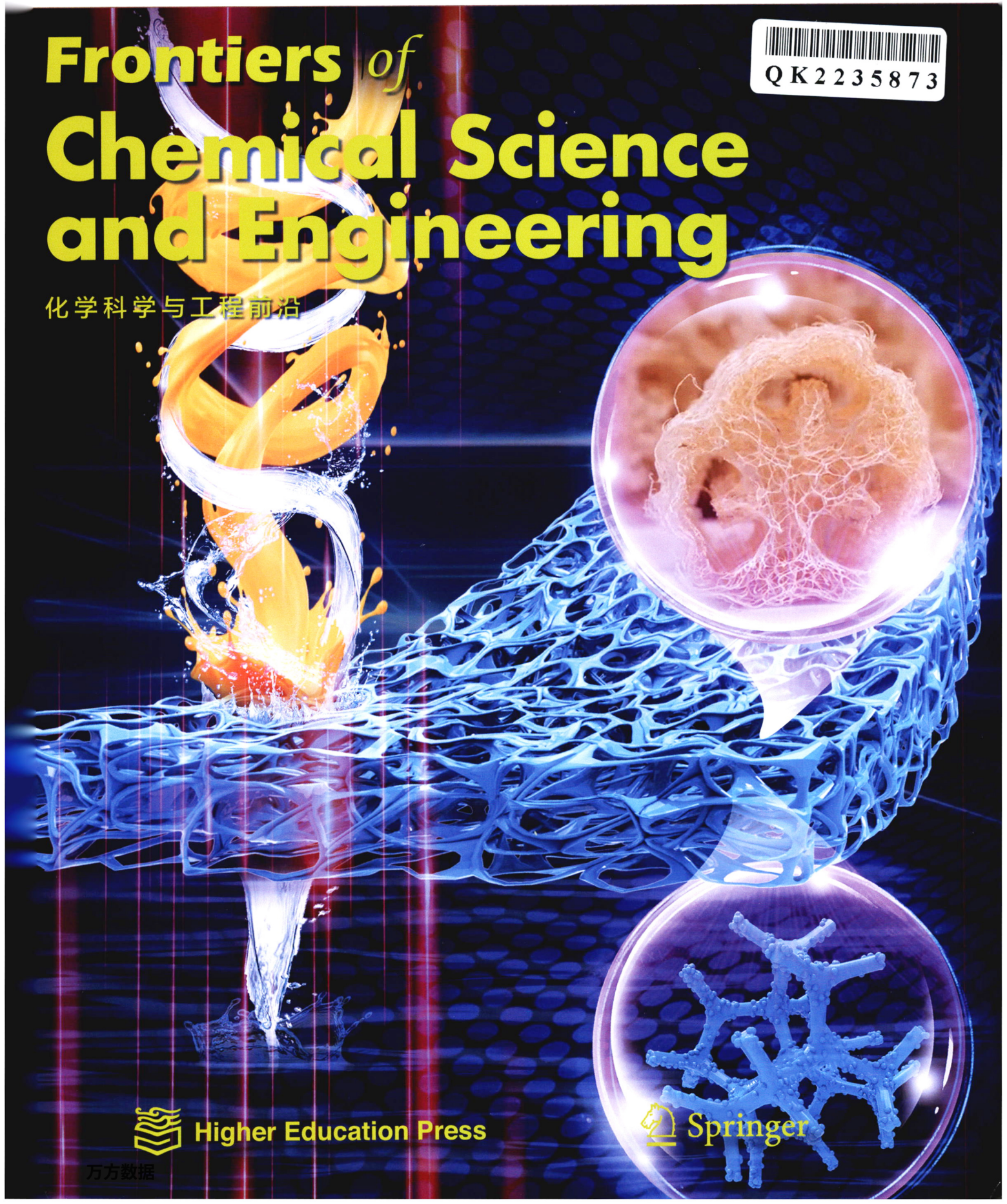
化学科学与工程前沿



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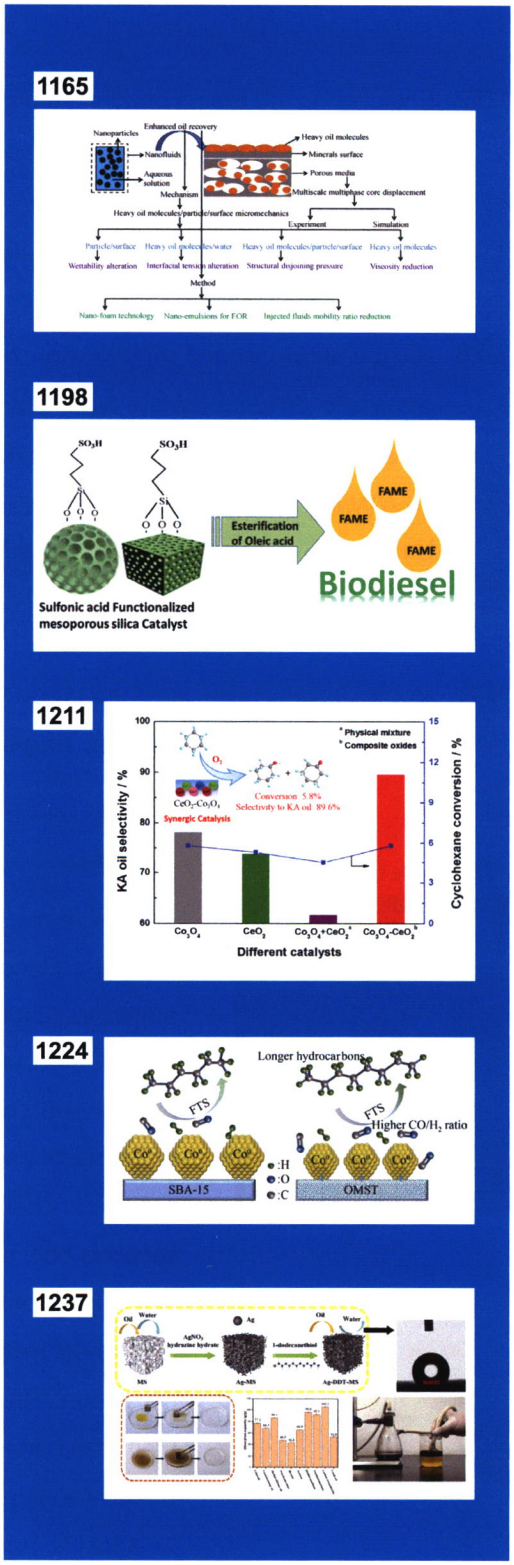
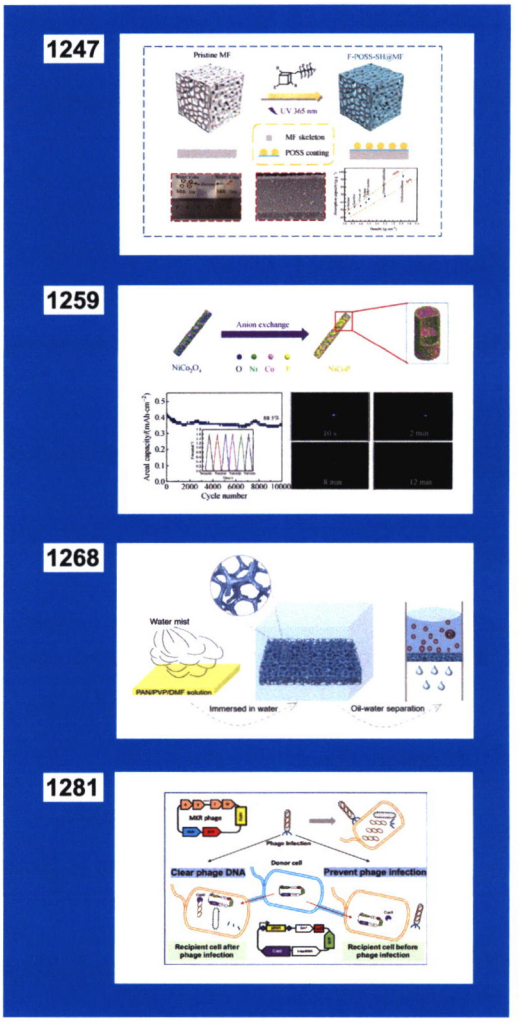
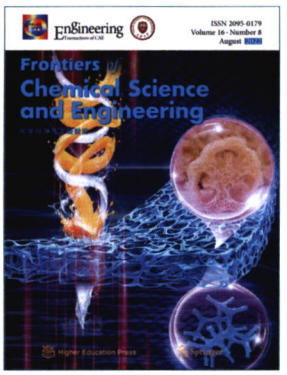
REVIEW ARTICLE

RESEARCH ARTICLE







COVER

The micro-nano composite structure can endow separation membranes with special surface properties. Herein, a novel and simple atomization-assisted nonsolvent induced phase separation method has been developed. By using this method, a bicontinuous porous microfiltration membrane with robust micro-nano composite structure was obtained via commercially available polymers of polyacrylonitrile and polyvinylpyrrolidone. The membrane exhibits superhydrophilicity in air and superoleophobicity underwater. The membrane can separate both surfactant-free and surfactant-stabilized oil-in-water emulsions with high separation efficiency and permeation flux. With excellent antifouling property and robust microstructure, the membrane can be easily recycled for long-term separation. The simple, efficient, cost-effective preparation method and excellent membrane properties indicate the great potential of the developed membranes in practical applications. (Jing Wang, Guoyuan Pan, Yu Li, Yang Zhang, Hongwei Shi, Xuanbo Liu, Hao Yu, Muhua Zhao, Yiqun Liu, Changjiang Wu, pp. 1268–1280)

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