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Supplementary Materials

Article

Optimization Using Response Surface Methodology (RSM) for Biodiesel Synthesis Catalyzed by Radiation-Induced Kenaf Catalyst in Packed-Bed Reactor

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Table S1. Elemental analysis of delignified kenaf and TMA-VBC-g-kenaf using EDX and CHNS.

Materials	CHNS analysis (N element)	EDX analysis (Cl element)	Total capacity exchange (−OH)
Raw kenaf	0.0 mmol TMA/g-catalyst	0.70%	-
VBC-grafted kenaf catalyst	2.15 mmol TMA/g-catalyst	7.43%	1.3143 meq g^{-1}
Amberlite® IRA910 resin	1.93 mmol TMA/g-resin	4.68%	0.8546 meq g^{-1}

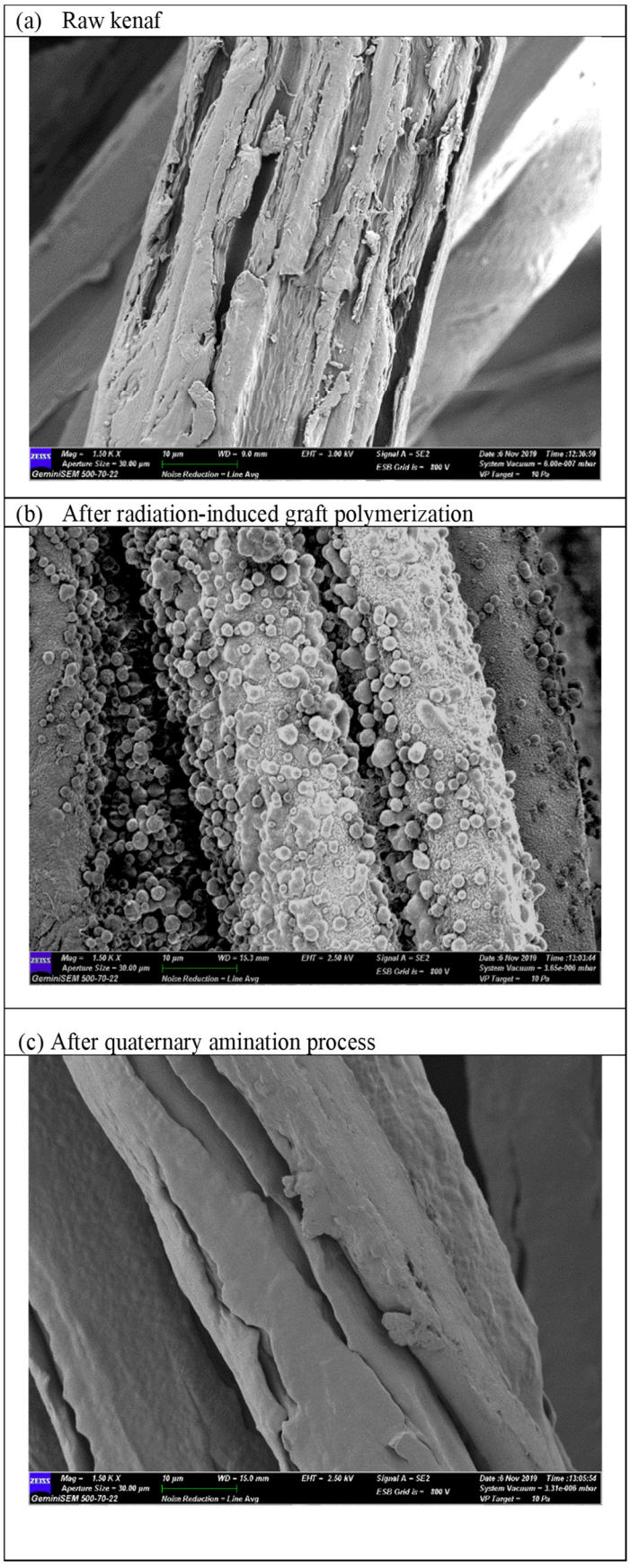

Figure S1. FE-SEM images of changes on the surface of kenaf fibers: (a) raw kenaf (b) after radiation-induced graft polymerization, and (c) After quaternary amination process.