

Functionalization strategies for the preparation of azidized polyvinyl chloride nanofiber and its utilization for radionuclide recovery

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Azidized polyvinyl chloride (PVC) nanofiber (NF) holds a multitude of potential applications since it makes PVC NF amenable to further modification through various techniques such as click or nitrene chemistry. Here we report a collection of strategies for attaching azide groups onto the PVC backbone, utilizing organic solvent and aqueous systems, and a heretofore unreported technique employing Finkelstein reaction. High azidation degrees were obtained, and the utility of azidized PVC NF for further modification was demonstrated by loading with ligands for radioactive metal ion recovery. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science and ICT (No. 2016R1A2B1009221 and No. 2017R1A2B2002109), and the Ministry of Education (No. 2009-0093816).