

Preparation and characterization of MFI-type zeolite on both side of alumina substrate towards redox flow battery application

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In redox flow battery development, membrane is one of a key component. Instead of ion selective polymeric membrane size selective zeolite membrane can be added advantageous. In the present investigation, MFI-type zeolite seed was prepared at high temperature and rubbed on the alumina substrate (tube) on the both side. Then the MFI-type zeolite seed subbed alumina substrate further coated by secondary ion coating method at hydrothermal condition. The MFI-type zeolite coating at both stages was confirmed by surface characterization technique such as SEM-EDS and XRD. Additionally, by measuring conductivity using an electrochemical impedance whether the MFI-type zeolite coated on the alumina substrate. Finally, the MFI-type zeolite coated tubular membrane was tested to vanadium-zinc redox flow battery analysis.

Key words: Preparation of MFI-type zeolite, tubular membrane, tubular electrochemical cell, redox flow battery.