

MFI-type zeolite coated ceramic tubular membrane developed for generation of two electron mediators concurrently

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The robustness and high volumetric conversion performance of tubular electrochemical reactor was disclosed to generate a single mediator. The present work explains two homogeneous mediators Co(III) and  $[\text{Ni(I)(CN)}_4]^{3-}$  have been generated using a tubular MFI-type zeolite coated ceramic membrane divided electrochemical cell via paired electrolysis. The electro-generation of Co(III) and  $[\text{Ni(I)(CN)}_4]^{3-}$  were achieved in highly acid and highly base pHs respectively. The achieved Co(III) and  $[\text{Ni(I)(CN)}_4]^{3-}$  concentrations by the MFI-type membrane containing tubular cell was 57% and 15%, which are equal to the commonly used Nafion324 membrane in planar arrangement. At the same time no migration of Co(II) or  $[\text{Ni(II)(CN)}_4]^{2-}$  were observed and additional results will be discussed finally.

Key words: Zeolite tubular membrane, tubular electrochemical cell, two mediator generation, paired electrolysis