

## Publication

## 2,2':6',2''-Terpyridine-functionalized redox-responsive hydrogels as a platform for multi responsive amphiphilic polymer membranes

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Nanophase-separated amphiphilic polymer co-networks are ideally suited as responsive membranes due to their stable co-continuous structure. Their functionalization with redox-responsive 2,2'':6'',2''''-terpyridine-metal complexes and light-responsive spiropyran derivatives leads to a novel material with tunable optical, redox and permeability properties. The versatility of the system in complexing various metal ions, such as cobalt or iron at different concentrations, results in a perfect monitoring over the degree of crosslinking of the hydrophilic poly(2-hydroxyethyl acrylate) channels. The reversibility of the complexation, the redox state of the metal and the isomerization to the merocyanine form upon UV illumination was evidenced by cyclic voltammetry, UV-Vis and permeability measurements under sequential conditions. Thus, the membrane provides light and redox addressable functionalities due to its adjustable and mechanically stable hydrogel network.

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