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Title: Electrocatalytic Epoxidation of Cyclooctene on Surface Modified Ni Foam Using Water as Oxygen Source

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Abstract: Electrochemical epoxidation of olefins using water as an oxygen atom source is emerging as an alternative approach for an atom economic and sustainable method towards a highly selective synthesis of epoxides. We report an electrochemical procedure for epoxidation of cyclooctene using water as the sole oxygen atom source over a sodium dodecyl sulfonate (SDS) modified nickel hydroxide Ni(OH)2 catalyst directly grown on Ni foam. The SDS modification facilitates the mass transfer of cyclooctene towards the anode, thus achieving a 2.5-fold higher conversion with more than 90 % selectivity towards the corresponding epoxide compared with pure Ni(OH)2 catalyst.
An electrocatalytic strategy for highly selective epoxidation of cyclooctene to the corresponding epoxide is demonstrated using Ni foam as electrocatalyst using water as the oxygen source. By controlling the hydrophobicity of the Ni foam surface the conversion of cyclooctene was substantially increased.+ image

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