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Electrochemical reduction of nitrate at a poly crystalline SnCu modified platinum surface by using an H^+ conducting solid polymer in a sandwich type membrane reactor

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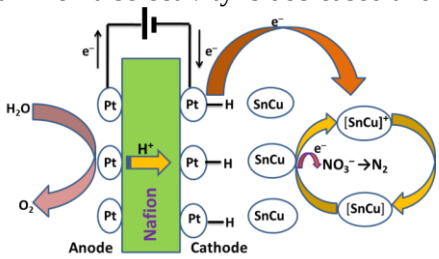
Graphical abstract

In a sandwich type membrane reactor, while Sn particles are incorporated with Cu-Pt catalyst, ammonia selectivity is decreased and nitrogen (N_2) selectivity is increased.



Abstract

The electrocatalytic reduction of nitrate ions (NO_3^-) was performed in a neutral medium by using a sandwich type membrane reactor, M│Nafion│Pt–X (where, X= Cu, SnCu). The voltammetric and electrolysis results showed that the performances of catalytic surface were in the order of Pt< Cu–Pt < SnCu–Pt. A Cu–Pt catalyst generated ammonia, conversely, a