

ABSTRACT**"A HYDROGEN OR OXYGEN ELECTROCHEMICAL PUMPING CATALYTIC
MEMBRANE REACTOR AND ITS APPLICATIONS"**

The present invention describes a new type of chemical reactor, described as hydrogen or oxygen electrochemical pumping catalytic membrane reactor. This new type of reactor is particularly suitable for increasing the selectivity and the conversion rate of dehydrogenation, hydrogenation, deoxidation and oxidation reactions and namely in the direct amination reaction of hydrocarbons.

This reactor can be used for the production of several chemical compounds, such as the direct amination of hydrocarbons and in particular for the synthesis of aniline from benzene. In this application, wherein hydrogen is removed by electrochemical pumping of the hydrogen formed or by oxygen pumping so, as hydrogen is formed, it is oxidized. This new reactor exhibits benzene to aniline conversion higher than 40 %.