APPARATUS AND METHOD OF CATALYSIS

ABSTRACT

This invention relates to a method of selection of an electrocatalyst array for a desired product outcome. The method comprises exposing an electrocatalyst system to an active agent dissolved or suspended in a conductive solution; and applying a voltage to the electrocatalyst system. The voltage sufficient to cause a multi-electron oxidation or multi-electron reduction of the active species; the electrocatalyst system comprises a counter electrode; and an electrocatalyst array. The array comprising a support substrate; uniformly sized surface structures protruding from a surface of the support substrate; the uniformly sized surface structures have edges and/or apices comprising a catalyst. When the uniformly sized surface structures are of a micrometer scale a first product ratio is produced, when the uniformly sized surface structures are of a nanometer scale a second product ratio is produced, wherein the first and second product ratios are different; the second product ratio requires a higher order electron process compared to producing the first product ratio.

Fig. 1