

Title (en)
ELECTROCHEMICAL CELL AND PROCESS

Title (de)
ELEKTROCHEMISCHE ZELLE UND VERFAHREN

Title (fr)
CELLULE ÉLECTROCHIMIQUE ET PROCÉDÉ

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Application
EP 16788728 A 20161102

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Abstract (en)
[origin: GB2545444A] An electrochemical cell 10 comprising; first volume 1 exposed to surfaces of an anode 28 and cathode 24, a steam inlet 5 allowing steam into first volume 1 and a structure 4 comprising a solid catalyst. A further aspect is a method and arrangement for producing a gaseous product e.g. ammonia from first and second source materials, the arrangement comprising the electrochemical cell 10, an electrolyte 20, means 5, 22 for introducing the first source material and means 2, 24 for introducing the second source material 26 into the first volume. The method also comprises introducing the second source material 26 into the second volume 2 so that it reacts at the cathode 24 to produce a first ionic component in the electrolyte 20 in the first volume 1. The first source material and ionic component react to form a gaseous product such as ammonia, NH₃. The first source material may be steam, second source material 26 may be nitrogen and first ionic component may be nitride ions, N³⁻. The structure 4 comprising a solid catalyst may be a 3D grid, wool structure or in the form of spheres. The catalyst may be a Fe or Ru based catalyst. The cathode 24 may be a gas electrode with a porous cathode and second volume 2. The anode 28 may be a gas electrode comprising a porous anode and third volume 3. The steam inlet 5 may have a diffuser 22. The arrangement may have a power supply 7 and an enclosure 6 to trap the gaseous product.

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