CLAIMS

1. Use of a substrate of formula $Ce_{1-x}M_xO_2$, wherein x is between about 0 and about 0.3, optionally between about 0.01 and about 0.3, and wherein M, if present, is a metallic element other than Ce, for reducing poisoning of a catalytic element by a sulfur-containing gas or vapour.

2. A method for reducing poisoning of a catalytic element by a sulfur-containing gas or vapour, said method comprising depositing said catalytic element on a substrate, wherein said substrate has formula $Ce_{1-x}M_xO_2$, wherein x is between about 0 and about 0.3, optionally between about 0.01 and about 0.3, and wherein M, if present, is a metallic element other than Ce.

3. The method of claim 2 wherein said depositing is conducted before exposing said catalytic element to the sulfur-containing gas or vapour.

4. The method of claim 2 or claim 3 wherein the depositing is such that the catalytic element is present in discrete regions on the substrate.

# Methanation Catalyst

## ABSTRACT

The invention relates to a catalyst, comprising a catalytic element disposed on a substrate, wherein said substrate has formula $Ce_{1-x}M_xO_2$, wherein x is between about 0 and about 0.3, optionally between about 0.01 and about 0.3, and wherein M, if present, is a metallic element other than Ce, when used for catalysing a methanation reaction. There is also described use of the catalyst for catalysing a methanation reaction and a method for methanation of a feedstock including carbon monoxide and hydrogen, said method comprising contacting the feedstock with the catalyst.

(Fig. 1)