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<p>(51) International classification :B01J23/10, B01J23/63, B01J23/83, B01J37/02, B82Y30/00, B82Y40/00, C01B3/40</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : 1)RVR & JC COLLEGE OF ENGINEERING Address of Applicant :RVR & JC COLLEGE OF ENGINEERING CHANDRAMOULIPURAM, CHOWDAVARAM, GUNTUR PIN - 522 019 Guntur ----- -- -----</p> <p>Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : 1)Dr. K. Ramesh Chandra Address of Applicant :Associate Professor DEPARTMENT OF CHEMICAL ENGINEERING RVR & JC COLLEGE OF ENGINEERING CHANDRAMOULIPURAM, CHOWDAVARAM, GUNTUR PIN - 522 019 Guntur ----- -- -----</p> <p>2)Dr. D.N.V. Satyanarayana Address of Applicant :Associate Professor DEPARTMENT OF CHEMICAL ENGINEERING RVR & JC COLLEGE OF ENGINEERING CHANDRAMOULIPURAM, CHOWDAVARAM, GUNTUR PIN - 522 019 Guntur ----- -- -----</p> <p>3)Dr. K. Sobha Address of Applicant :Professor DEPARTMENT OF CHEMICAL ENGINEERING RVR & JC COLLEGE OF ENGINEERING CHANDRAMOULIPURAM, CHOWDAVARAM, GUNTUR PIN - 522 019 Guntur ----- -- -----</p> <p>4)Dr. G. Kavitha Address of Applicant :Assistant Professor DEPARTMENT OF CHEMICAL ENGINEERING RVR & JC COLLEGE OF ENGINEERING CHANDRAMOULIPURAM, CHOWDAVARAM, GUNTUR PIN - 522 019 Guntur ----- -- -----</p>
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(57) Abstract :

NANOSTRUCTURED CATALYSTS FOR ENHANCED HYDROGEN PRODUCTION VIA STEAM METHANE REFORMING
ABSTRACT The present invention relates to nanostructured catalysts designed for enhanced hydrogen production via steam methane reforming (SMR). The catalyst comprises catalytic nanoparticles supported on a porous material, with a specific composition including nickel, ruthenium, and a promoter such as cobalt. These nanoparticles exhibit a synergistic effect, leading to superior catalytic activity and stability in the SMR process compared to conventional catalysts. The preparation method involves impregnating the support material with precursor solutions of the catalytic metals and promoters, followed by controlled heat treatment. In SMR, the catalyst demonstrates high methane conversion rates, resistance to carbon deposition, and prolonged operational lifespan. This invention offers a promising solution for improving hydrogen production efficiency and sustainability in various industrial applications.

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