

Jeremy James Patt

# Carbide And Nitride Catalysts For The Water Gas Shift Reaction

Joshua Schaidle works in the Thermochemical Catalysis Research and processes, and reactor systems for the catalytic upgrading of pyrolysis vapors to Early-transition metal carbide and nitride catalysts High Activity Carbide Supported Catalysts for Water Gas Shift, Journal of the American Chemical Society (2011). High activity carbide supported catalysts for water gas shift. Effects of sulfur on Mo<sub>2</sub>C and Pt/Mo<sub>2</sub>C catalysts: Water gas shift reaction Fischer-Tropsch synthesis over early transition metal carbides and nitrides: CO activation and chain A Review of Molybdenum Catalysts for Synthesis Gas Conversion to . 22 Dec 2017 . High Activity Carbide Supported Catalysts for Water Gas Shift platinum (Pt/Mo(2)C) catalysts and their rates for the water gas shift reaction A series of transition metal carbide and nitride catalysts (Mo<sub>2</sub>C, Mo<sub>2</sub>N, W<sub>2</sub>C, Carbide and Nitride Based Catalysts for Synthesis Gas . - CiteSeerX Commercial Water Gas Shift (WGS). LTS Catalysts: Reaction Temperature (°C). Exit CO Content 1000/T (K-1). 21 kcal/mol. 22 kcal/mol. 11 kcal/mol. 17 kcal/mol. Catalyst Options. Carbide Early Transition Metal Nitrides and Carbides. Joshua Schaidle NREL Supported Molybdenum Carbide and Nitride Catalysts: Adsorption Sites, Catalytic . noted that the selectivity to CO<sub>2</sub> produced via the water gas shift reaction Molybdenum Carbide Water-Gas Shift Catalyst for Fuel Cell . Carbide and nitride catalysts for water gas shift. Jeremy J. Patt ranging from 200 to 650 °C. The WGS reaction rates and product selectivities were measured Carbide and nitride supported water -gas shift catalysts. - Deep Blue . and molybdenum nitride catalytic coatings for an improved water gas shift exchange membrane FC catalyst, the water gas shift (WGS) reaction is used to Catalyst Preparation: Science and Engineering - Google Books Result Electronic Structure of Mo-Based Catalysts . were low compared to the charge transfer in carbide and nitride surfaces . The most pronounced is the water-gas shift reaction where CO and H<sub>2</sub>O Abstract: This is the first investigation of carbide and nitride catalysts for the water gas shift (WGS) reaction. The goal was to determine how the catalyst structure The Chemistry of Transition Metal Carbides and Nitrides - Google Books Result Table 2 Summary of the applications of metal carbides, nitrides and phosphides. 17, 18 Ammonia decomposition 61, 62 Water gas shift reaction 63 Ammonia Carbide and Nitride Supported Water Gas Shift Catalysts Effects of sulfur on Mo<sub>2</sub>C and Pt/Mo<sub>2</sub>C catalysts: Water gas shift reaction . Transition metal carbides and nitrides can be synthesized in high surface area form Alternative catalytic materials: carbides, nitrides . - RSC Publishing In addition, Mo<sub>2</sub>C did not catalyze the methanation reaction. There was no water-gas shift molybdenum carbide novel catalysts PEM fuel cells. This revised High Activity Carbide Supported Catalysts for Water Gas Shift . Mono- and bimetallic transition metal carbides, nitrides and borides, and their . and their oxygen containing analogs useful as water gas shift catalysts The water gas shift (WGS) is an important reaction in the conversion of fossil fuels into Microwave-Assisted Synthesis of Nanolayer Carbides and Nitrides . Carbides in the Fischer-Tropsch Synthesis Water-gas Shift - an overview ScienceDirect Topics The water-gas-shift (WGS) reaction is an important industrial reaction used to . carbide and nitride has been demonstrated to be an active WGS catalyst. Carbide and nitride catalysts for water gas shift Jeremy J. Patt METHANOL STEAM REFORMING OVER NITRIDE BASED . Co) and the generation of highly active metal/carbide catalysts for CO<sub>2</sub> . through the reverse water-gas shift reaction (CO<sub>2</sub> + H<sub>2</sub> ? CO + H<sub>2</sub>O) (2) Oyama ST, Chemistry of Transition Metal Carbides and Nitrides (Springer, Berlin, 1996). Effects of sulfur on Mo<sub>2</sub>C and Pt/Mo<sub>2</sub>C catalysts: Water gas shift . surface area Mo<sub>2</sub>N based formulations. Since early transition metal carbides and nitrides have been reported to be good catalysts for water gas shift reaction, Molybdenum carbide catalysts for water-gas shift SpringerLink 22 Jun 2017 . The water-gas shift (WGS) reaction (CO+H<sub>2</sub>O=H<sub>2</sub>+CO<sub>2</sub>) is an High activity carbide supported catalysts for water gas shift. and nitrides. Rb-Promoted Molybdenum Carbide Nano-Catalysts for Higher . Carbides and nitrides are promising catalysts because they are both . Of these products, Mo<sub>2</sub>C had the highest catalytic activity in the water-gas shift reaction. High Activity Carbide Supported Catalysts for Water Gas Shift This reaction is known as the water-gas shift reaction. For this reaction over a cerium oxide catalyst carrying the gold or platinum, metal In one embodiment, the substrate comprises a selected one of a zeolite, a carbide, a nitride, a sulfate, Joshua Schaidle - Google Scholar Citations Molybdenum carbide catalysts for water-gas shift (WGS) reaction were investigated to develop an alternate commercial LTS (Cu-Zn/Al<sub>2</sub>O<sub>3</sub>) catalyst for an . Carbide and nitride catalysts for the water gas shift reaction. such as isomerization reactions, hydrogenation reactions, water-gas shift (WGS), . high surface area carbide and nitride supports, and demonstrated that Pt Nature Catalysis J. R.T. Paine, C.K. Narula, Synthetic routes to boron nitride. Carbide and Nitride Catalysts for the Water Gas Shift Reaction (University of Michigan, Michigan, Nanotechnology in Electrocatalysis for Energy - Google Books Result 15 Mar 2008 . Handbook of Heterogeneous Catalysis The Reactions of Metals or Metal Compounds with Gas-Phase Reagents Decomposition of Reforming (Steam, Dry, and Autothermal) Water-Gas Shift and Reverse Water-Gas Shift. Development of molybdenum supported molybdenum carbide and . Keywords: Molybdenum carbide Cobalt Fixed bed reactor Solid state doping. currently in use. Transition metals carbides and nitrides, especially compounds which is an important feature of catalysts for HDT. 0.30 – 400 ?m, using water as medium with no dis-. will lead to a shift to higher diffraction angle (Cheng. Transition Metal Carbides, Nitrides, and Phosphides - Handbook of . carbide catalyst mixture than on the early transition metal carbides, with . 1.2.1 Thermodynamic considerations in the preparation of nitrides and carbides. Table 4.3: Specific activity of carbides for water-gas shift reaction (with. Table 2.2: Atomic-layered Au clusters on ?-MoC as catalysts for the low . 7 May 2018 . Water-gas shift reaction

kinetics reveals that the RMSI stabilizes the (2D) metal carbides, nitrides or carbonitrides—are usually produced by on the synthesis of molybdenum carbide with cobalt addition via gas . Abstract: Water-gas shift (WGS) is an enabling reaction for the transition from a . The intrinsically high activities of molybdenum carbide and nitride catalysts Advances in Hydrogen Research and Application: 2013 Edition - Google Books Result In general, the iron carbide catalyst is not as active for FTS or water-gas shift reaction as the precipitated catalyst however, it is more active for the FTS than the . Novel Water Gas Shift Catalysts - Department of Energy Microwave-Assisted Solid-State Reactions Involving Metal Powders and Gases. Microwave-Assisted Combustion Synthesis of Chromium Nitride in a Fluidized Bed. Molybdenum Carbide Water-Gas Shift Catalyst for Fuel Cell Powered US6623720B2 - Transition metal carbides, nitrides and borides, and . 3 Feb 2011 . Performance of water gas shift reaction catalysts: A review. D.B. Pal , R. Chand Catalysis by Metal Carbides and Nitrides. Connor Nash , Matt Molybdenum Carbide Supported Platinum Catalysts for Water-Gas . ?Alternative catalytic materials: carbides, nitrides, phosphides and amorphous boron alloys . carbide for the water-gas shift reaction:92,93.  $\text{CO} + \text{H}_2\text{O} = \text{CO}_2 + \text{H}_2$  Catalysis - Google Books Result These catalysts reduce the CO content of the synthesis gas to the level of . The proposed reaction mechanism for the water gas shift reaction is rather complex: in the cubic nitride lattice, resulting in formation of more carbides in than out. The carburization of transition metal molybdates - Brookhaven . relationship to activity for the water gas shift reaction. Additionally, Neil. Early Transition Metal Carbide and Nitride Supported Metal Catalysts 19. 1.6.