
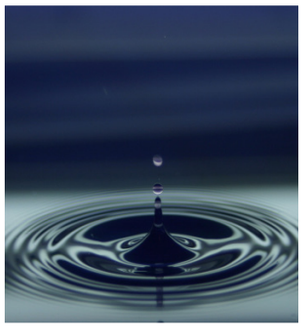


Synthesis of nitrogen or phosphorous containing compounds

In this modified Fischer-Tropsch process valuable nitrogen or phosphorous containing products of varying chain length are produced via co-feeding of suitable gases such as ammonia. These nitrogen-containing products include amines, nitriles, amides and formamides.

The Fischer-Tropsch synthesis is an important process to convert coal, natural gas and biomass to a variety of hydrocarbon products of different chain length. These products mainly find use as transportation fuels including petrol jet fuel and diesel as well as speciality waxes.

Amines and nitriles are important base chemicals and they are typically produced from oxygenate precursors which themselves are derived from olefins. The UCT process eliminates the use of two steps.

Benefits

- Can be incorporated in existing Fischer-Tropsch plants/ units without catalyst modification (iron based catalysts are best suited)
- Allows flexible operation of Fischer-Tropsch plants/ units in either 'fuels' or 'chemicals' mode
- Production of valuable chemicals not traditionally obtained in the Fischer-Tropsch synthesis such as nitrogen and phosphorous containing compounds
- One-step synthesis of nitrogen and phosphorous containing compounds instead of two-step process
- Suppression of oxygenate formation including carboxylic acids
- Possibility to selectively convert oxygenates including glycerine to valuable nitrogen and phosphorous containing compounds
- Can be tailord to respond quickly to changing market conditions ('demand driven production')
- Ideal for smaller Fischer-Tropsch operations

Market

An ideal commercial partner to use this modified process will be a company that is in the feed-to-liquid (XTL) business with focus on chemical production or a company that is already in the XTL business, but with an interest in making use of the potential of the Fischer-Tropsch synthesis to produce highly valuable nitrogen and phosphorous containing compounds. It is also to those who want to selectively convert oxygenates including glycerine to nitrogen and phosphorous containing products.

Moreover, catalysts manufactures who may improve and maximise the performance of catalysts for the modified process will have an interest in this process.

Keywords:

Fischer-Tropsch synthesis,
Nitrogen products,
Phosphorous products,
Ammonia

Intellectual Property Rights:

Contact:
Dr. Revel Iyer,
Business Development Manager,
Research Contracts & IP Services,
University of Cape Town,

revel.iyer@uct.ac.za
www.rcips.uct.ac.za

Technical description

A process for the production of at least one nitrogen or phosphorus containing compound selected from linear nitriles, amides, formamides and linear phosphorous containing compounds from synthesis gas during the hydrogenation of carbon monoxide and or carbon dioxide components in a synthesis gas in a feed to a reactor in which a catalyst acts on the feed at a temperature of between 160°C and 400°C and under a pressure of between 1 bar and 50 bar, the process being characterised in that at least one nitrogen and phosphorous containing compound is fed to the reactor together with the synthesis gas and in that the catalyst is heterogeneous and the process conditions are selected to favour the production of said at least one nitrogen or phosphorus containing compound selected from linear nitriles, amides, formamides and linear phosphorous containing compounds.

Intellectual Property Status

Type	Region	Application No	Filing Date	Publication Number	Priority Date
Provisional	South Africa	2008/03393	16-Apr-08		16-Apr-08
PCT	PCT	PCT/ IB2009/005242	15-Apr-09	WO2009/127942	16-Apr-08
National Phase	China	200980113744.1	18-Oct-10	102026962	16-Apr-08
National Phase	Europe	09733651.5	01-Nov-10		16-Apr-08
National Phase	GCC	13302/2009	16-Apr-09		16-Apr-08
National Phase	South Africa	2010/07629	26-Oct-10		16-Apr-08
National Phase	United States	12/988,052	15-Oct-10	US-2011-0092728-A1	16-Apr-08

This IP is jointly owned by UCT and Carol von Ossietzky Universitat Oldenburg (Germany).

The inventors are Michael Claeys, Eric van Steen, Frank Rößner, and Tawanda Sango.

About Research Contracts & IP Services

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