

OVERVIEW OF TECHNICAL SOLUTIONS IN PRODUCTION OF CO SHIFT CONVERSION CATALYSTS

Bityutska V., Sincheskul O., Kobziev O., Deineka D., Volobuyev M.

*National Technical University
«Kharkiv Polytechnic Institute», Kharkiv*

The paper considers technical solutions related to the improvement of CO shift conversion catalysts and their technology. The author Pavlii L. proposed obtaining a catalyst by components co-deposition with improvement of the sediment washing process, which increases the catalyst activity and makes it possible not to carry out the desulfurization process [1]. Alexander A.-M. with co-authors made changes to the method of the catalyst calcination, using an inert atmosphere, and changed the shape of its granules [2]. The author Bychko I. with colleagues proposed obtaining a catalyst based on zirconium oxide with small additions of cuprum, ferrum, and cerium oxides. This makes it possible to carry out the CO shift conversion process in one stage [3]. The inventor Karpovich I. with co-authors changed the temperature intervals of the catalyst heating and activation processes for low-temperature CO shift conversion. Such a technical solution allows to increase the activity of such a catalyst [4]. The author Stryzhak P. together with colleagues proposed a new composition of the low-temperature CO shift conversion catalyst, as well as a method of co-deposition of components to increase its activity [5]. The author Harmash B. with co-authors proposed a method of obtaining a high-temperature CO shift conversion catalyst from TiO₂ production waste by the method of co-deposition of components with a special technology of washing the precipitate [6]. The researcher Sincheskul O. together with colleagues proposed changing the starting raw material of the catalyst and a new method of its recovery, using C₆H₁₂N₄ instead of the gas containing CO та H₂ [7, 8].

References:

1. Method for preparing a synthesis gas conversion catalyst and a synthesis gas conversion method: pat. 798135 Ukraine : B01J 23/80, B01J 37/03, C07C 1/04. № a 2007 08707 ; app. 30.07.2007 ; publ. 10.02.2009, Bul. № 3. 5 p.
2. Water Gas Shift Catalyst : pat. 123999 Ukraine : C01B 3/16, B01J 23/70, B01J 35/10, C01G 37/02, C01G 45/02, C01G 49/02, C01G 49/06, C01F 5/02, C01F 7/02, C01G 3/02. № a 2018 05845 ; app. 14.10.2016 ; publ. 07.07.2021, Bul. № 27. 14 p.
3. Steam reforming catalyst of carbon monoxide : pat. 60805 Ukraine : B01J 21/00, B01J 23/10, B01J 23/72, B01J 23/745. № c2 2001 106851; app. 09.10.2001 ; publ. 15.06.2005, Bul. № 6. 4 p.
4. Method for activation of low-temperature catalyst for conversion of carbon oxide : pat. 47282 Ukraine : B01J 37/18, B01J 37/16. № a201402830 ; app. 07.09.2012 ; publ. 12.01.2016, Bul. № 1. 7 p.
5. Method of producing a catalyst of steam conversion of carbon monoxide : pat. 97954 Ukraine : C01 B3/12, C01B3/16, C01B3/58, C01B31/20, C10K1/00, B01J33/00. № u 2014 11945 ; app. 04.11.2014 ; publ. 10.04.2015, Bul. № 7. 4 p.
6. Process for preparing iron-chrome catalyst of medium temperature conversion of carbon monoxide : pat. 81030 Ukraine : B01J 23/86, B01J 23/885. № u 2012 05682 ; app. 10.05.2012 ; publ. 25.06.2013, Bul. № 12. 9 p.
7. Method of producing middle-temperature conversion of carbon oxide (II) by water steam : pat. 62472 Ukraine: B01J 23/885. № u 2011 02440 ; app 01.03.2011 ; publ. 25.08.2011, Bul. № 16. 3 p.
8. Process of preparation catalyst for medium temperature conversion of carbon oxide (II) with water steam : pat. 37401 Ukraine : B01J 23/885. № u 2008 08148 ; app 17.06.2008 ; publ. 25.11.2008, Bul. № 22. 3 p.