

Purchase

Export

Search ScienceDirect



Advanced search

Article outline

 Show full outline

Highlights

Abstract

Keywords

1. Introduction

2. Materials and methods

3. Results and discussion

4. Conclusion

Appendix A. Supplementary material

References

Figures and tables

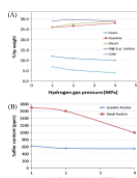
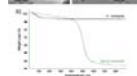


Table 1

Supplementary data 1

Fuel

Volume 184, 15 November 2016, Pages 555–558



Short communication

Acid treated halloysite clay nanotubes as catalyst supports for fuel production by catalytic hydrocracking of heavy crude oil

Vagif M. Abbasov^a, Hikmat C. Ibrahimov^a, Gulbaniz S. Mukhtarova^a, Elshad Abdullayev^{a, b}^a Institute of Petrochemical Processes, Azerbaijan National Academy of Sciences, Baku AZ1025, Azerbaijan^b Ennis-Flint Science and Technology Center, Thomasville, NC 27360, United States

Received 17 May 2016, Revised 12 July 2016, Accepted 14 July 2016, Available online 21 July 2016



Show less

<https://doi.org/10.1016/j.fuel.2016.07.054>[Get rights and content](#)

Highlights

- Heavy oil residue was catalytically hydrocracked to obtain liquid fuels.
- NiO and CoO were seeded on acid leached halloysite nanotubes and used as a suspended catalyst.
- Proposed method allowed to obtain fuels at significantly lower hydrogen gas pressure of 1 MPa.
- Total yield of the gasoline and diesel varied at 52–57% range.
- Obtained diesel and gasoline can be used as motor fuels after further desulfurization treatment.

Abstract

Acid treated halloysite nanotubes were utilized as a support for the NiO and CoO catalysts for the hydrocracking of the heavy oil residua obtained from vacuum distillation of the Azerbaijan crude oils. Halloysite was treated with hydrochloric acid prior to seeding the catalysts. Catalysts were further activated in plasma furnace at 850 °C under argon atmosphere. Oil residue was hydrocracked with the catalyst at 450 °C and 1–4 MPa pressure range. Increase of the hydrogen gas pressure from 1 to 4 MPa caused increasing the yield of the liquid fuels (gasoline and diesel) from 52% to 57%. Compositions of the gasoline and diesel fractions were analyzed in detail and it has been established that these products can be used as a fuel in vehicles with further desulfurization process.

Keywords

Halloysite; Hydrocracking; Heavy oil residua; Gasoline; Diesel

Choose an option to locate/access this article:

Check if you have access through your login credentials

Purchase \$37.95

Get Full Text Elsewhere

or your institution



Sign In

Corresponding author at: 30 Khojaly Avenue, Baku, Azerbaijan.
© 2016 Elsevier Ltd. All rights reserved.

Recommended articles

[A DNS study on effect of coal particle swelli...](#)
2016, Fuel [more](#)

[A review on the oil-soluble dispersed catalys...](#)
2016, Journal of Industrial and Engineering Chemi... [more](#)

[Steam reforming of phenol as biomass tar m...](#)
2016, Fuel [more](#)

[View more articles »](#)

Citing articles (0)

Related book content
