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APPENDICES

Appendix A Study Acetaldehyde feed

Table A1 Product yield and acetaldehyde conversion over HZSM-5 with SiO_2/Al_2O_3 of 80 (Reaction conditions: 400 °C, 300 psig, and TOS = 3 h)

W/F (h)	0.1	0.5
Conversion (%)	72.6	98.6
Oxygenate (mol_{carbon} %)	*43.3*	*6.5*
Acetaldehyde	27.4	1.4
Formaldehyde-	0.0	0.0
Propanal	1.4	1.4
Acetone	0.0	0.0
Propenal	0.0	0.0
Methanol	0.0	0.0
Ethanol	0.0	0.0
Alkyl alcohol	0.0	0
Acetol	0.0	0.0
Acetic	14.6	3.7
Propanoic	0.0	0.0
Heavy oxygenate	0.0	0.0
Hydrocarbon (mol_{carbon} %)	*56.7*	*93.5*
C1-C3 Paraffins	2.6	24.0
C4+ Paraffins	1.5	11.3
Ethylene	12.8	2.3
Propylene	17.4	0.9
Butene	0.0	0.0
Benzene	2.6	7.7
Toluene	7.4	26.1
EB	0.8	1.0
p-Xylene	1.3	2.9
m-Xylene	2.6	6.5
o-Xylene	1.2	2.9
C9Aromatics	4.3	5.8
C10Aromatics	0.7	0.7
C11Aromatics	0.5	0.8
C12Aromatics	0.4	0.2
C13Aromatics	0.6	0.2

Appendix B Study Glycerol feed

Table B1 Product yield and glcerol conversion over HZSM-5 with SiO_2/Al_2O_3 ratio 30. (Reaction conditions: 400 °C, 300 psig, and TOS = 3 h)

SiO_2/Al_2O_3 ratios	30
Conversion (%)	100
Oxygenate (mol_{carbon} %)	*9.7*
Acetaldehyde	0.8
Formaldehyde	0.0
Propanal	1.4
Acetone	0.7
Propenal	0.2
Methanol	0.2
Ethanol	0.0
Alkyl alcohol	1.2
Acetol	0.0
Acetic	3.5
Propanoic	1.8
Heavy oxygenate	0.0
Hydrocarbon (mol_{carbon} %)	*90.3*
C1-C3 Paraffins	23.8
C4+ Paraffins	12.9
Ethylene	0.7
Propylene	0.4
Butene	0.0
Benzene	7.1
Toluene	19.7
EB	0.8
p-Xylene	3.9
m-Xylene	8.8
o-Xylene	3.9
C9Aromatics	4.9
C10Aromatics	0.6
C11Aromatics	1.6
C12Aromatics	1.0
C13Aromatics	0.3

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Presentations:

1. Tankul, S.; Jongpatiwut, S. (2014, March 10-12) Conversion of Biomass-derived Alcohols to Aromatics over Alkali-treated HZSM-5 Catalysts. Paper presented at The 15th Netherlands' Catalysis and Chemistry Conference, Noordwijkerhout, Netherland.
2. Tankul, S.; Jongpatiwut, S. (2014, April 22) Conversion of Biomass-derived Alcohols to Aromatics over Modified HZSM-5 Catalysts. Paper presented at The 5th Research Symposium on Petrochemicals and Materials Technology and the 20th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Ballroom, Queen Sirikit National Convention Center, Bangkok, Thailand.