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Supplementary Material

A Novel Self-Assembly Hierarchical-Structured Catalyst for the Diffusion of Macromolecules

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9. Figure S7 Schematic diagram of the hydrotreating process for FCC diesel.

S-1: Properties self-assembly supports

Table S1 The pore structure characteristic of FA self-assembly supports.

Property	FA Ⅰ	FA Ⅱ	FAⅢ
V_{pore} , ($mL \cdot g^{-1}$)	0.52/1.31*	0.60/1.34*	0.55/1.39*
A_{BET} , ($m^2 \cdot g^{-1}$)	235/253*	238/256*	231/253*
Average d_{pore} , nm	9.0/21.8*	10.1/20.9*	9.6/22.8*
Most probable d_{pore} , nm	8.0,25.0/7.5,42.0*	9.0,23.0/45.0*	7.0,45.0/7.0,45.0*
Pore distribution，%			
<6nm	22/3*	22/4*	23/4*
6-10nm	16/9*	14/12*	14/13*
10-30nm	26/32*	25/33*	24/36*
30-60nm	24/33*	26/40*	36/41*
60-100nm	12/12*	13/5*	3/3*
>100	11*	7*	3*
Bulk density , $g \cdot cm^{-3}$	0.34/0.63*	0.31/0.59*	0.34/0.64*
Strength , ($N \cdot mm^{-1}$)	8.2	8.5	8.5
Porosity* / %	77	81	82

Data of "*" represent mercury intrusion method. Others indicate BET method.

S-2: Structure unit of RHP

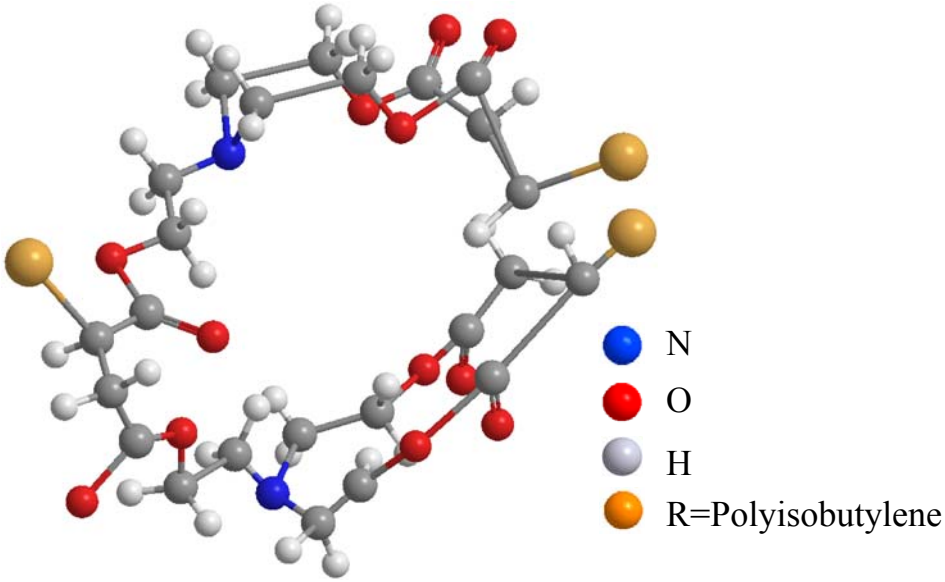
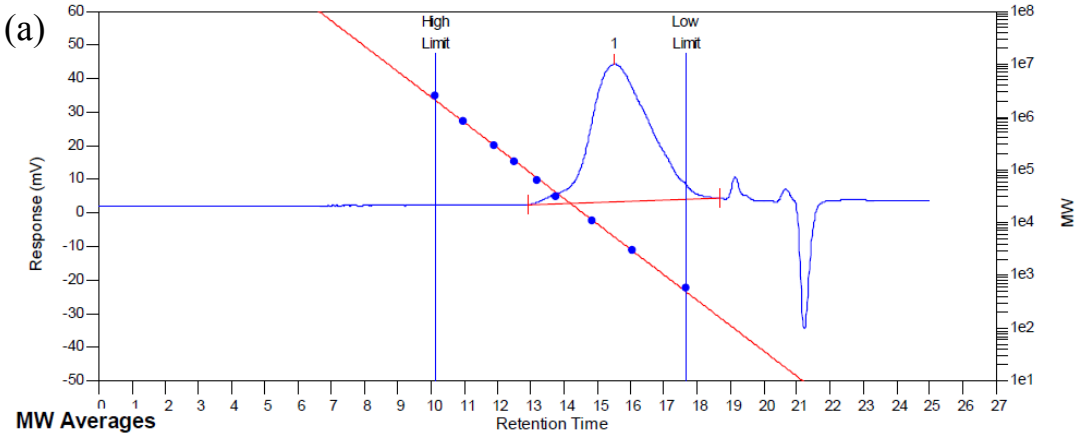


Figure S1 The 3D structure unit of RHP.

S-3: The GPC analysis of RHP

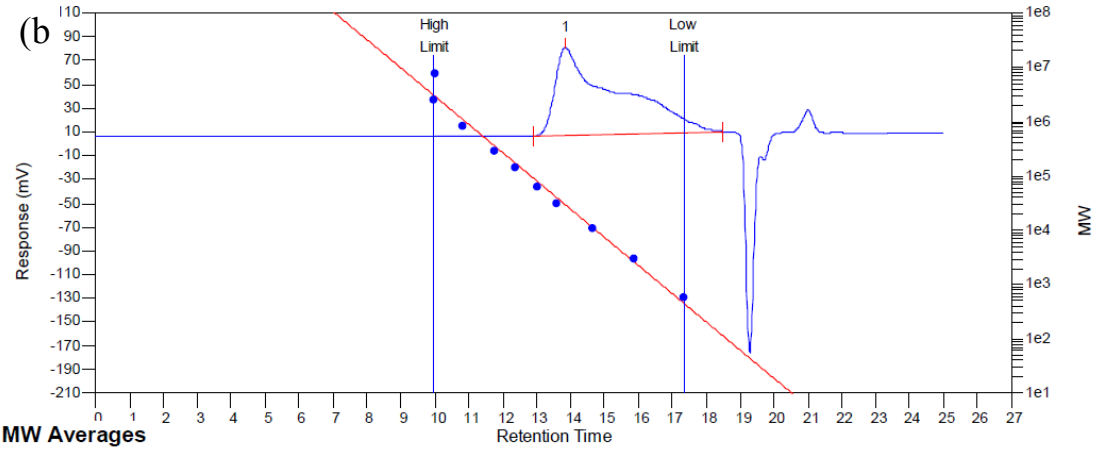
(a)



MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	5314	2566	6288	14752	29824	5521	2.45051

(b



MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	29533	2545	14384	28085	35549	12284	5.65187

Figure S2 Relative molecular mass of different RHP by GPC traces. The (a) and (b) represent mass ratio 4:1 and 12:1 of the copolymer of polyisobutylene and maleic anhydride and triethanolamine, respectively.

S-4: Processing of self-assembly synthesis

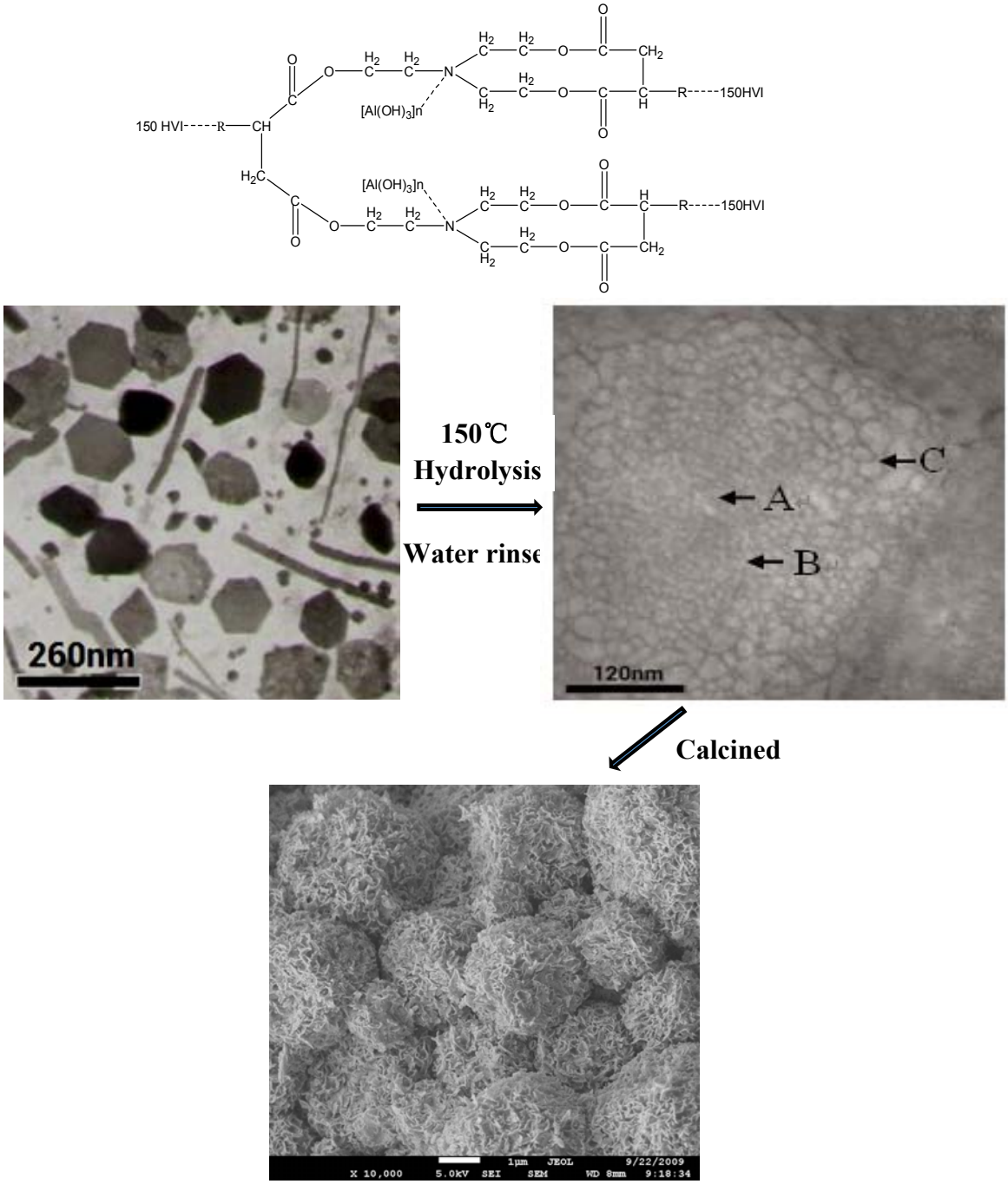


Figure S3 The structure unit of super-solubility micelle and the process of formation from molecular self-assembly to nano self-assembly.

S-5: XRD of macropore alumina support

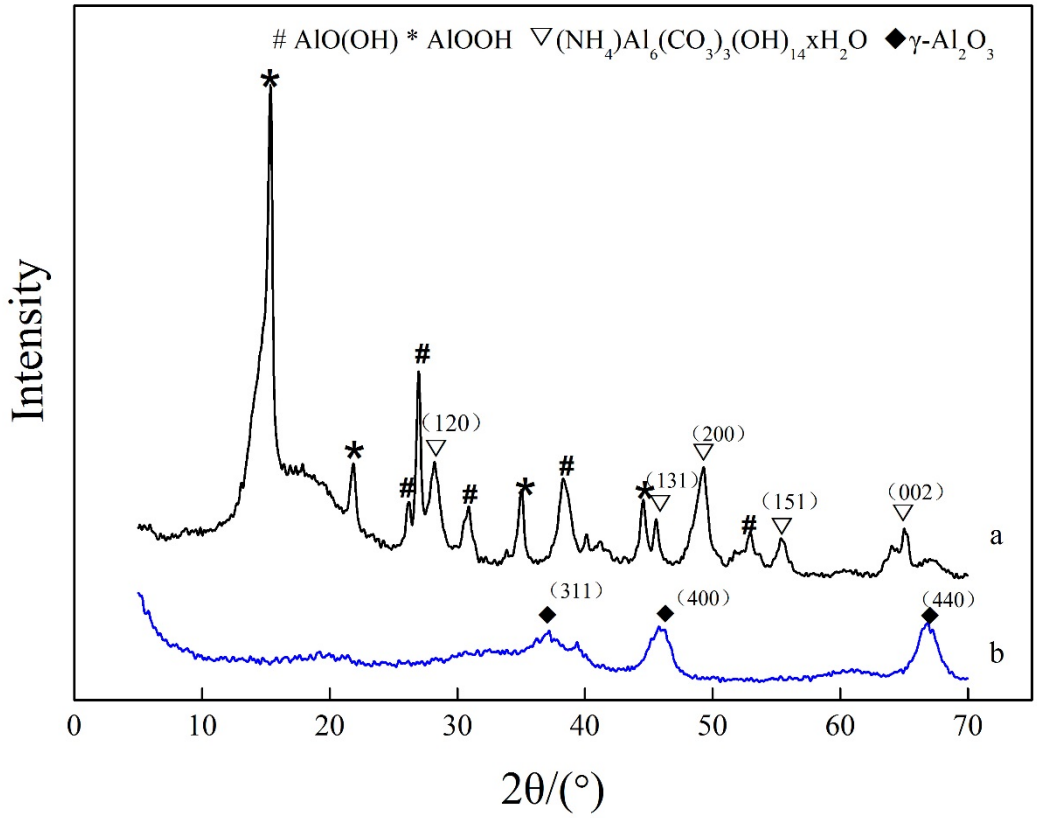


Figure S4 XRD patterns of nano self-assembly aluminum hydroxide before (a) and after (b) calcinations.

S-6: The XPS analysis of the Mo3d of catalysts.

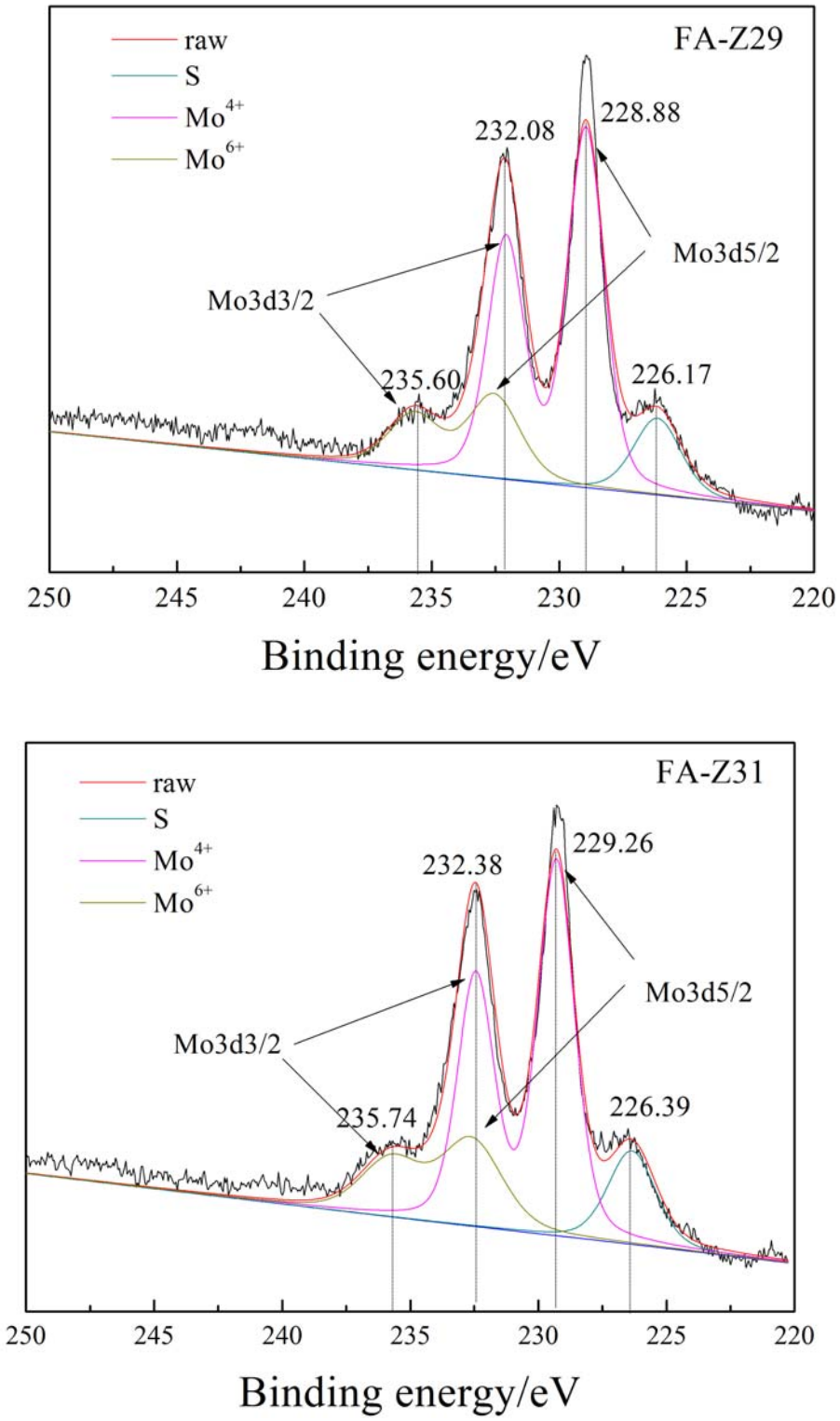


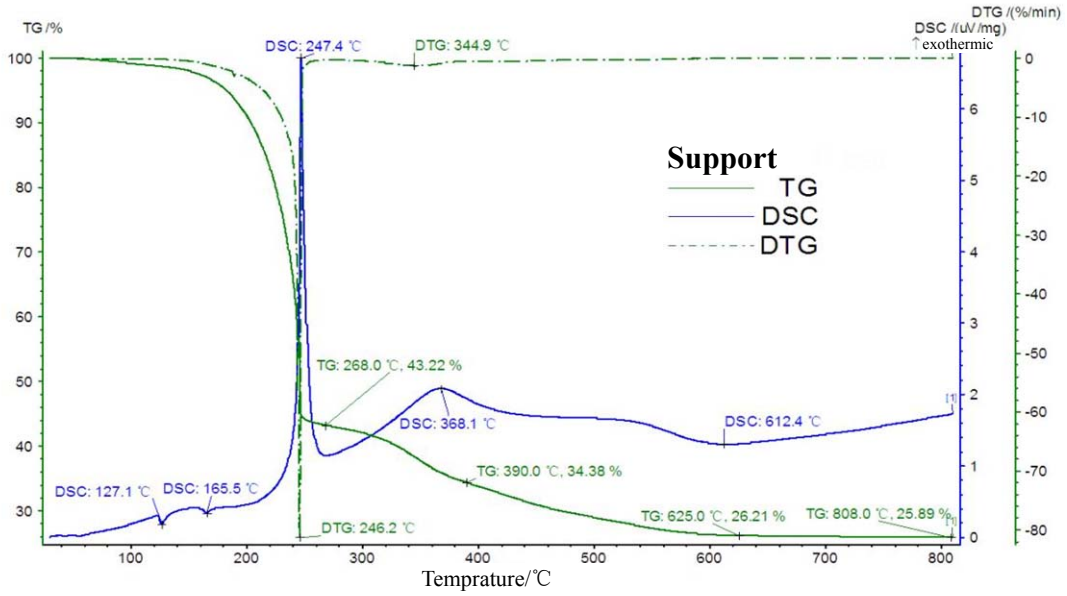
Figure S5 XPS profiles of the Mo3d curve fitting of the sulfured FA-Z catalysts.

S-7:

Table S3 The binding energy and content of different valences Mo specie for FA-Z catalysts.

Catalyst	Binding energy/eV		Relative content /%	
	Mo^{4+}	Mo^{6+}	Mo^{4+}	Mo^{6+}
FA-Z29	228.87	232.07	75.42	24.58
FA-Z30	228.90	232.50	75.44	24.56
FA-Z31	229.25	232.37	72.64	27.36

S-8: Calcination conditions of support and catalyst



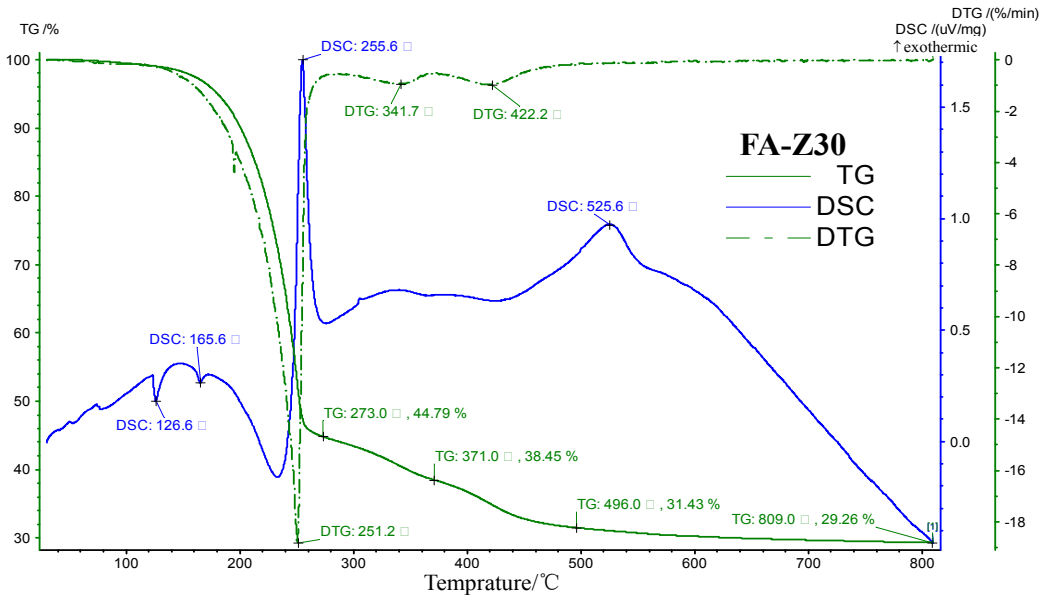


Figure S6 The curve of TG/DSC of the macro self-assembly Alumina support and catalyst.

S-9：Diagram of reaction equipment

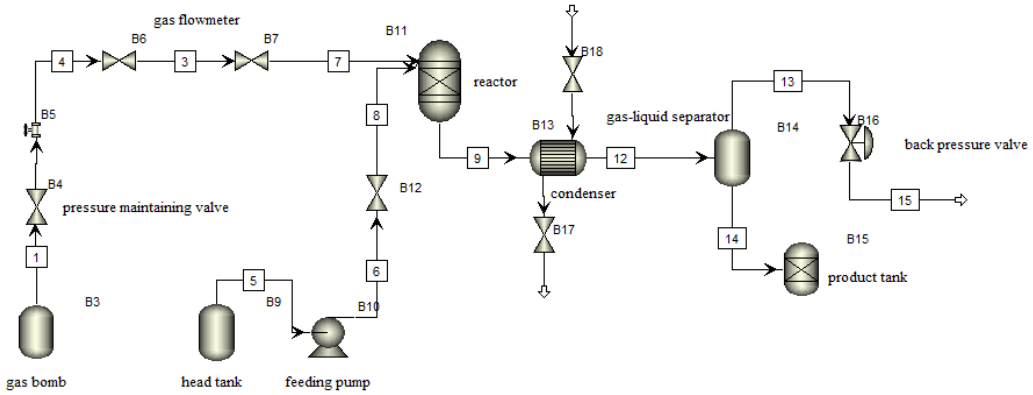


Figure S7 Schematic diagram of the hydrotreating process for FCC diesel.