

Supporting Information

A Novel Design for Simultaneous Production of Biodiesel and Glycerol Carbonate from Soybean Oil[†]

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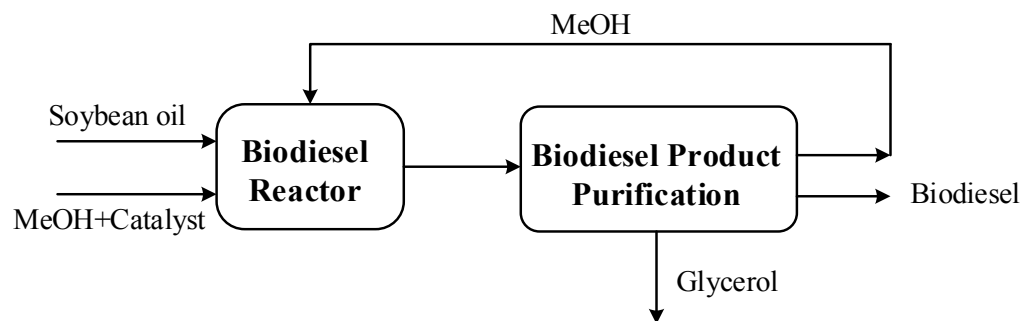


Figure S1. Flow diagram of the biodiesel production process.

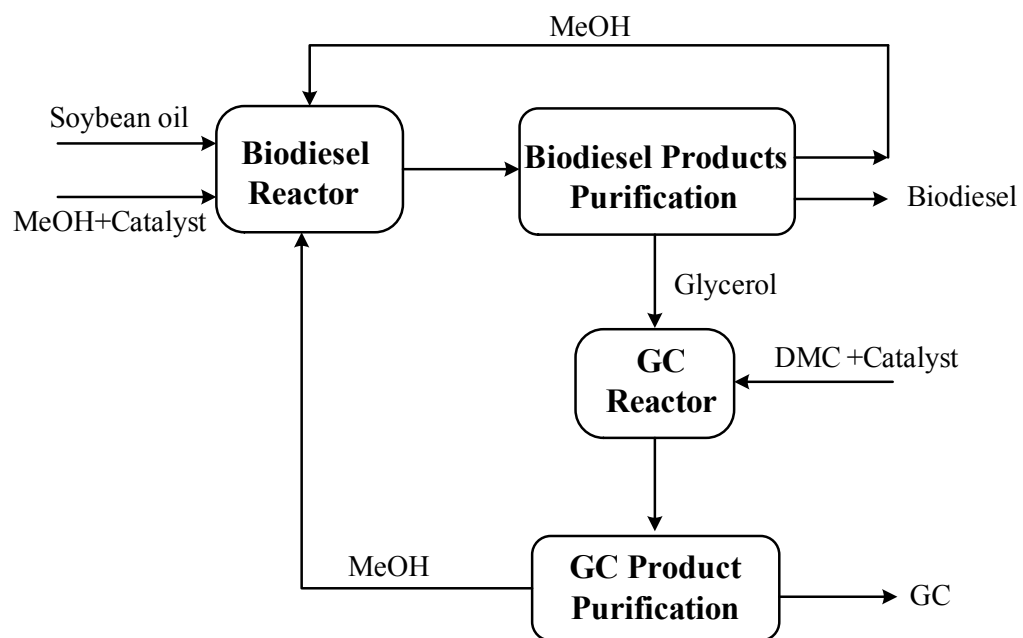


Figure S2. Flow diagram of the developed SBD&GC process.

Table S1. Process Streams Information of the SBD&GC Process

Stream ID	Block	Stream Type	T_{in} (°C)	T_{out} (°C)	Duty (GJ/h)
1	Reboiler@MEOHCOL	Cold Stream	88.6	154.9	2.18
2	Reboiler@MEOHCOL2	Cold Stream	81.3	119.8	0.47
3	Reboiler@GLYCOL	Cold Stream	89.4	198.7	0.36
4	HX2	Cold Stream	25.0	60.0	0.29
5	Reboiler@GCCOL	Cold Stream	108.7	216.5	0.13
6	HX5	Cold Stream	25.0	80.0	0.05
7	SIDEREB	Cold Stream	85.9	180.0	0.003
8	HX1	Cold Stream	59.9	60.0	0.004
9	Reboiler@FAMECOL	Cold Stream	277.3	302.8	3.12
10	Condenser@MEOHCOL	Hot Stream	74.8	65.1	-1.16
12	Condenser@MEOHCOL2	Hot Stream	65.6	65.0	-0.44
13	Condenser@GCCOL	Hot Stream	40.3	24.7	-0.07
14	Condenser@GLYCOL	Hot Stream	68.2	45.0	-0.19
15	Condenser@FAMECOL	Hot Stream	262.8	124.9	-2.56
16	HX4	Hot Stream	198.7	80.0	-0.12
17	HX3	Hot Stream	154.9	25.0	-1.34

Table S2. Utility Information in the Heat Integration of the SBD&GC Process

Utility	Operating temperature rang (°C)	Cost (\$/GJ)
Cooling water	20-25	0.212
HP steam	250-249	4.252
MP steam	175-174	2.502
LP steam	125-124	2.202
Fired heat	1000-400	1.901