

Optimization of operating conditions for the catalytic alcoholysis of waste PET for the synthesis of BHET by sunflower seed husk matrix materials

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1 Effects of different roasting temperatures on the properties of prepared catalysts

The effect of different roasting temperatures of sunflower seed shell catalyst on the yield of alcoholysis product BHET was investigated under the conditions of 1% catalyst (in terms of PET mass), reaction temperature 195 °C, reaction time 4 h, and ethylene glycol dosage 14 ml, and the results are shown in Fig. 1. It can be seen that the roasting of sunflower seed shells at a temperature of 750 °C had the optimum catalytic effect on PET, so the optimum roasting temperature of sunflower seed shells was 750 °C.

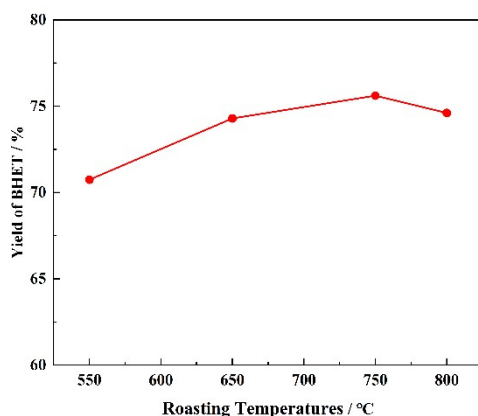


Fig.1 Effect of roasting temperature of sunflower seed husk on yield Results

2 Response surface design and results

Table S1 Response surface test design and results

serial number	considerations				BHET yield /%
	A	B	C	D	
1	-1	0	-1	0	75
2	0	0	0	0	79.3
3	1	0	-1	0	76
4	-1	0	1	0	76.7
5	0	-1	0	1	73.9
6	1	0	0	-1	77.7
7	0	1	1	0	79.6
8	0	0	1	-1	76.2
9	0	1	-1	0	74.3
10	-1	1	0	0	78.5
11	0	1	0	1	74.5
12	0	1	0	-1	79.4
13	0	-1	0	-1	78.1

14	0	0	0	0	78.1
15	-1	0	0	-1	76.5
16	0	0	-1	-1	73.2
17	1	0	1	0	76.5
18	0	1	-1	0	73.8
19	0	-1	1	0	78.8
20	1	-1	0	0	77.8
21	0	0	0	0	79.5
22	-1	0	0	1	76.2
23	0	0	1	1	73.1
24	1	1	0	0	75.3
25	0	0	0	0	79.8
26	0	0	0	0	78.3
27	-1	-1	0	0	75.2
28	1	0	0	1	76.8
29	0	0	-1	1	70.4
