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Exploring the Acidity of Functionalized Mesoporous Polymer Catalyst (P-SO_3H) for Glycerol *tert*-butyl ethers Synthesis

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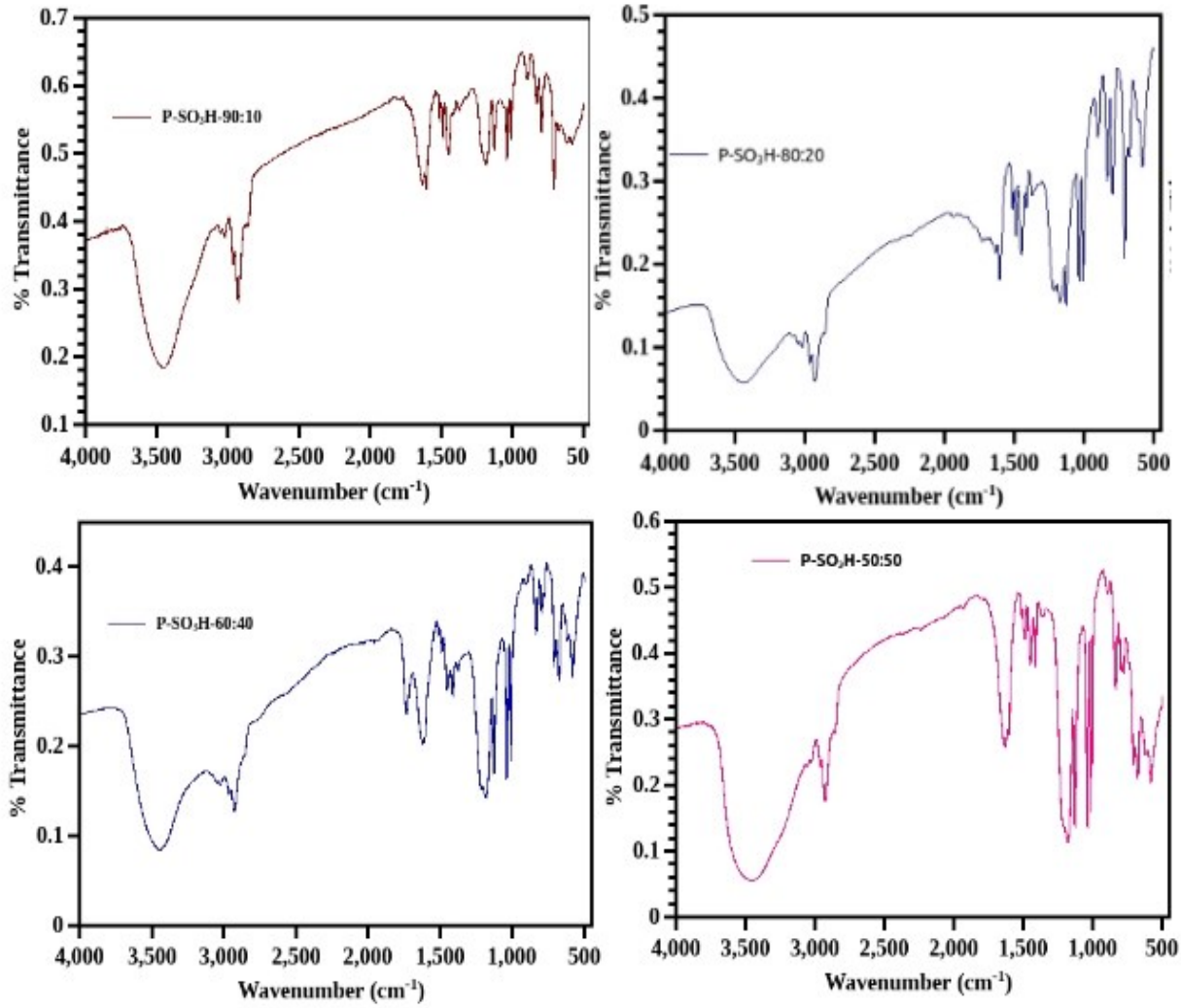

Figure S1. FTIR analysis spectra of polymer catalysts

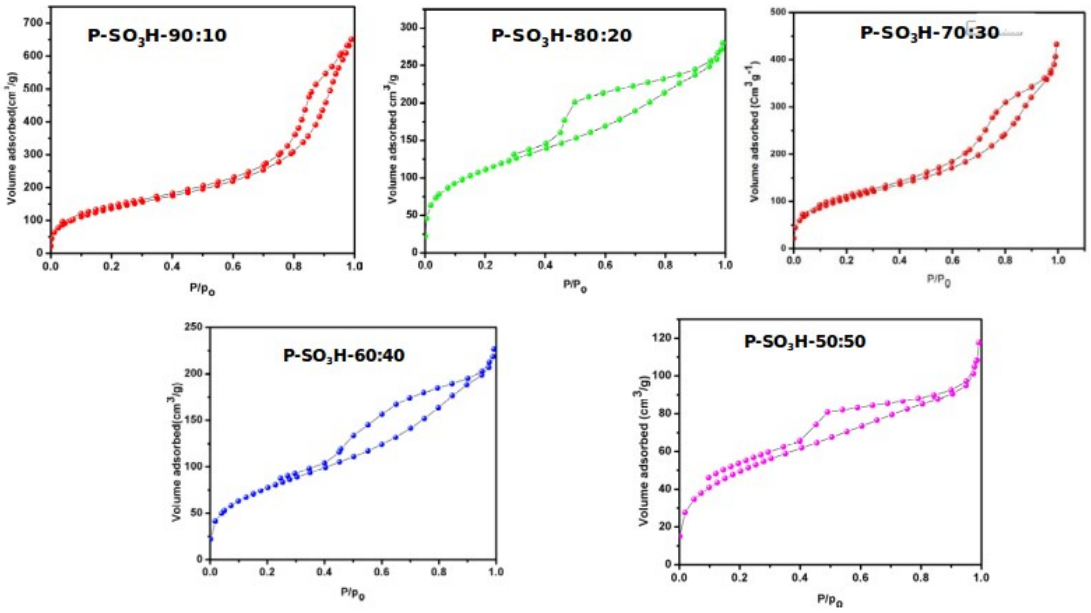

Figure S2. Nitrogen adsorption-desorption isotherms of P-SO_3H

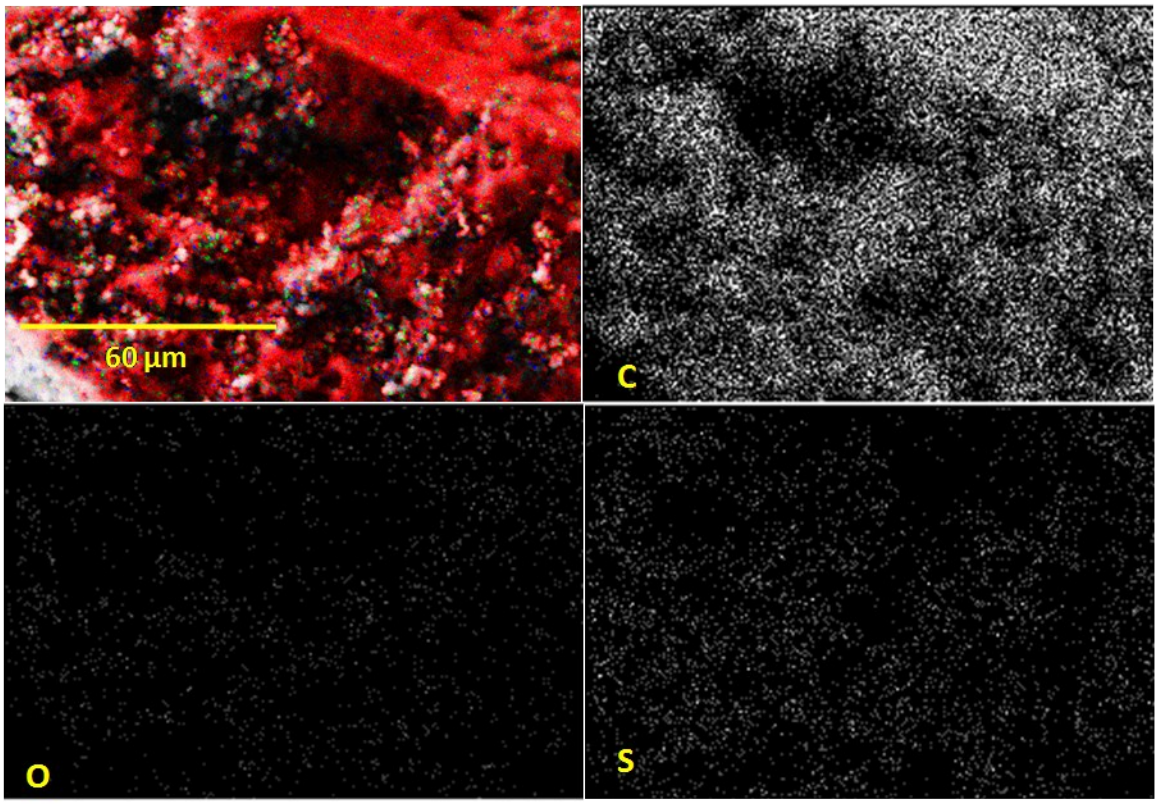

Figure S3. Elemental mapping images of C, O and S

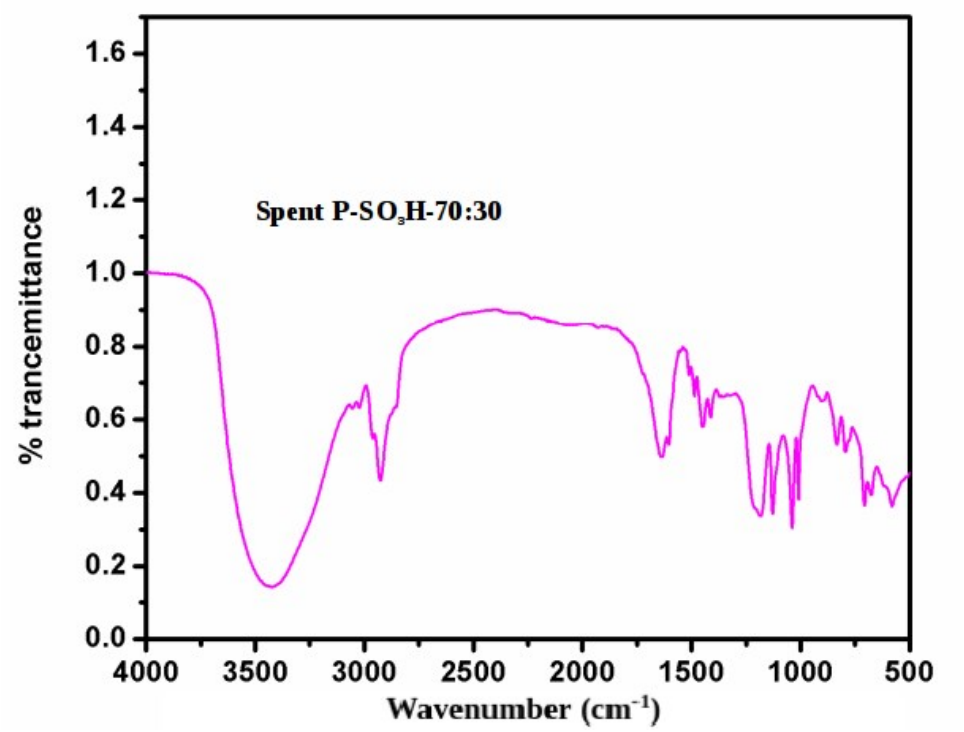

Figure S4. FTIR spectra of spent P-SO_3H-70:30

Table S1: Comparison of TOF values of P-SO_3H with the reported materials

Entry	Catalyst	Temp. (°C)	Cat. Conc. (wt. %)	TBA/ Gly.	Time (h)	TOF (h^{-1})	S h-GTBE	Ref.
1	A-15	60	7.5	4.0	8.0	3.0	15.0	1
2	A-15	90	6.0	8.0	48.0	0.7	36.0	2
3	AS100	90	5.0	4.0	5.0	5.7	19.0	3
4	TC-L	120	5.0	4.0	10	2.2	20	4
5	$S_{50}TS_{50}O$	75	5.0	4.0	24.0	3.9	28.0	5
6	P-SO_3H-90:10	95	5.0	4.0	6.0	43.4	18.7	P_w
7	P-SO_3H-80:20	95	5.0	4.0	6.0	20.7	24.4	P_w
8	P-SO_3H-70:30	95	5.0	4.0	6.0	14.8	33.3	P_w
9	P-SO_3H-60:40	95	5.0	4.0	6.0	11.5	27.2	P_w
10	P-SO_3H-50:50	95	5.0	4.0	6.0	9.6	25.4	P_w
11	**P-SO_3H-70:30**	**95**	**3.0**	**6.0**	**3.0**	**56.5**	**29.4**	**P_w**
12	P-SO_3H-70:30	95	3.0	6.0	24.0	6.8	43.3	P_w
13	FHB	75	5.0	4.0	24.0	13.9	37.0	6
14	H-Mordenite	75	5.0	4.0	48.0	7.4	11.0	6
15	MFI	90	7.5	4.0	10	3.4	<1.0	7
16	Mont-KSF/O	120	27.2	20.0	24.0	104.4	37.0	8
17	$Sn_2SiW_{12}O_{40}$	90	0.3	4.0	4.0	62.5	25.0	9[a]
18	FAU	90	7.5	4.0	10	1.8	-	7
19	H-Beta	90	6.0	8.0	48.0	1.7	32.0	2
20	BCC-S	120	5.0	4.0	5.0	8.8	20.0	10
21	A-15	90	7.5	4.0	7.5	9.6	25.0	11
22	BC 10:1–S2 h	120	5.0	4.0	8.0	5.7	20.0	12

[a] - 0.3 mole% catalyst used
P_w - Present work

Table S2: Physico-chemical properties of spent P-SO_3H

Catalyst	S_{BET} (m^2g^{-1})	Pore volume (cm^3g^{-1})	Pore size (nm)	Acidity (mmol H^+/g)
P-SO_3H-70:30	359	0.51	5.31	1.90

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