Supplementary Information

Selective Esterification of Glycerol over Ionic Liquid Functionalized Cellulose (IMD-Si/HSO_4@Cellulose) under energy efficient microwave irradiation

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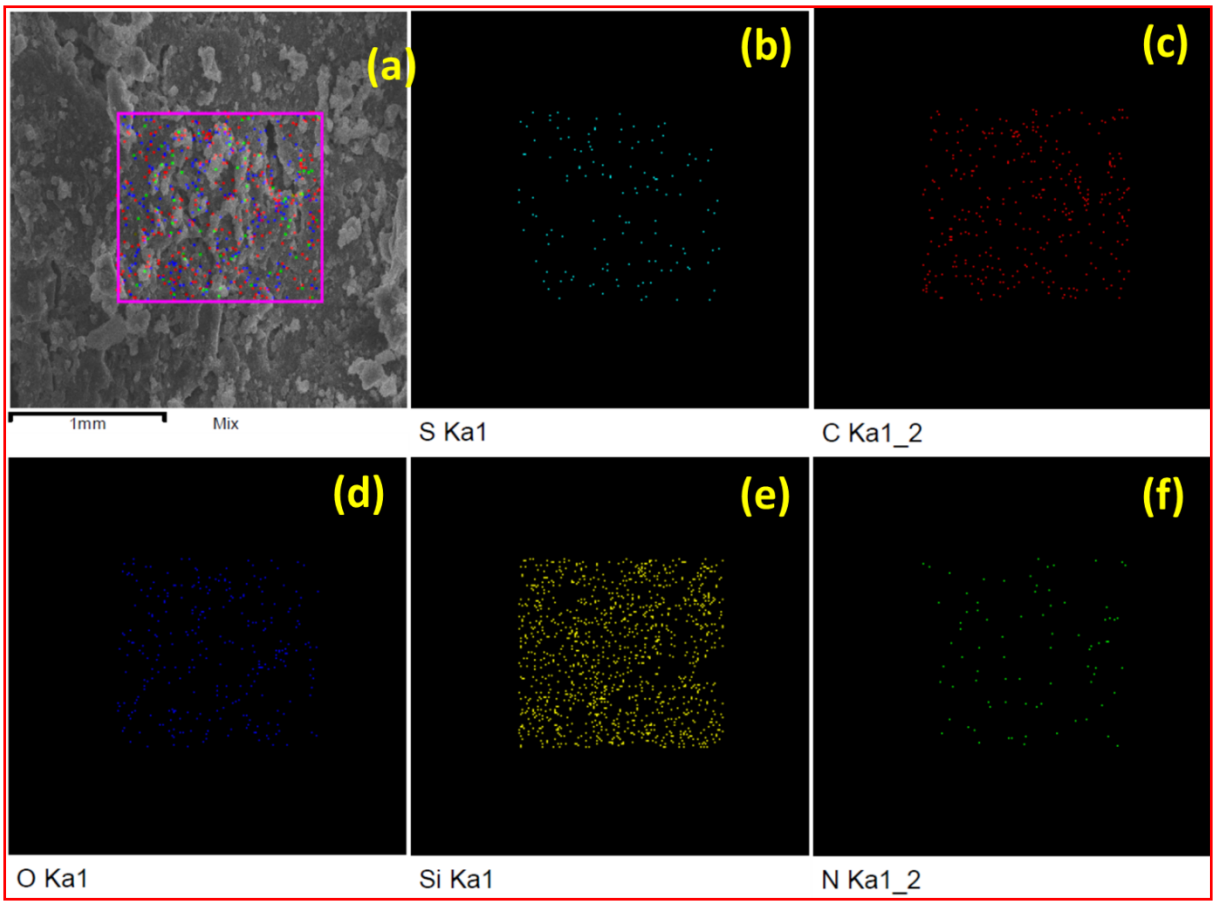

Figure S1: Elemental mapping images of (a) All elements of IMD-Si/HSO_4@Cellulose (b) Sulfur (c) Carbon (d) Oxygen (e) Silicon and (f) Nitrogen

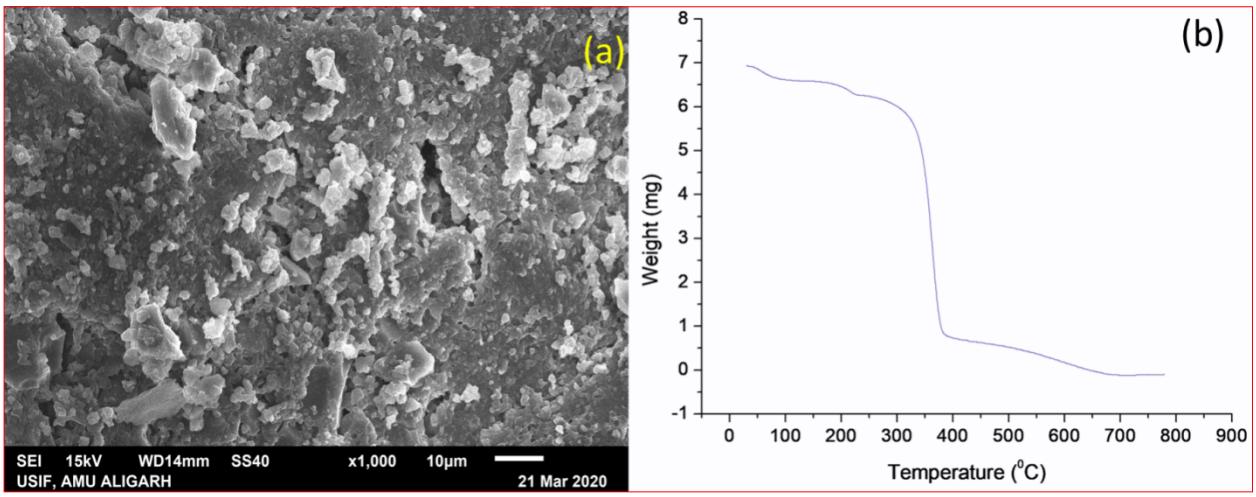

Figure S2: (a) SEM images of recycled catalyst and (b) TGA image of recycled catalyst

Table S1: Comparison of IMD-Si/HSO_4@Cellulose with other catalyst for acetylation of glycerol

Entry	**Acetylation source**	**Catalyst**	**Mono-acetin (%)**	**Di-acetin (%)**	**Tri-acetin (%)**	**Glycerol conversion %**	**Time**	**Ref.**
1#	Acetic acid	Amberlyst-35	NM	NM	34.8	100	4h	[1]
2#	Acetic acid	WO_3-Ppy-20	5	25	70	98	10 h	[2]
3#	Acetic acid	A15	0	0	95.3	100	24 h	[3]
4#	Acetic acid	TAC-673	NM	NM	50	99.6	4 h	[4]
5#	Acetic acid	[H-NEP][HSO_4]	23.4	55.2	21.3	99	30 min	[5]
6#	Acetic acid at scO_2	Amberlyst 15®	0	0	100	100	120 min	[6]
7#	Acetic anhydride and 1 ml H_2O	Fe-Sn-Ti(SO_4^{2-})-400	0	1	99	100	30 min	[7]
***8**	**Acetic acid**	**IMD-Si/HSO_4@Cellulose**	**<1**	**<1**	**99**	**100**	**8 min**	**This work**

*NM = Not mentioned, #Thermal conditions, *In microwave heating conditions*

Table S2: Recycling data of catalystat high conversion level under microwave irradiation

Entry	**No. of runs**	**Catalyst yield**	**Glycerol conversion**	**Selectivity of tri-acetin**
1	First	98	100	99
2	Second	98	100	99
3	Third	97	100	98
4	Fourth	97	99	98
5	Fifth	97	99	98
6	Sixth	95	99	97

Table S3: Recycling data of catalyst at low conversion level under thermal heating conditions

Entry	No. of runs	Catalyst yield	Glycerol conversion	Selectivity of tri-acetin
1	First	97	55	61.53
2	Second	97	50	61.53
3	Third	95	50	55.55
4	Fourth	95	37.5	50.00
5	Fifth	93	32.5	45.45

References

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