

SUPPLEMENTARY MATERIAL

Lignin as a Sacrificial Agent for Tailoring the Properties of ZSM-5 Zeolites

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Figure S1. Nitrogen adsorption isotherm for 4-ZSM-5, a zeolite synthesized with TPAOH during 4 h.

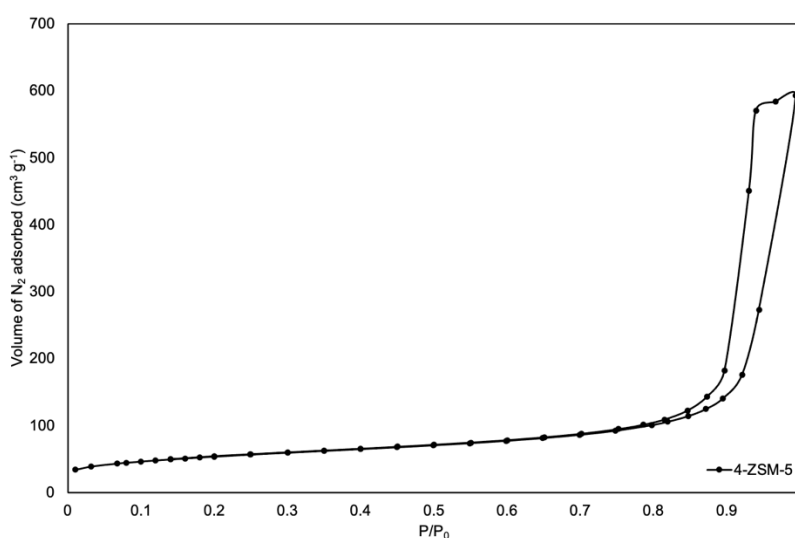


Figure S2. Nitrogen adsorption isotherms for zeolites synthesized with TPAOH (ZSM-5) during 8, 12, 16, 20, and 24 h.

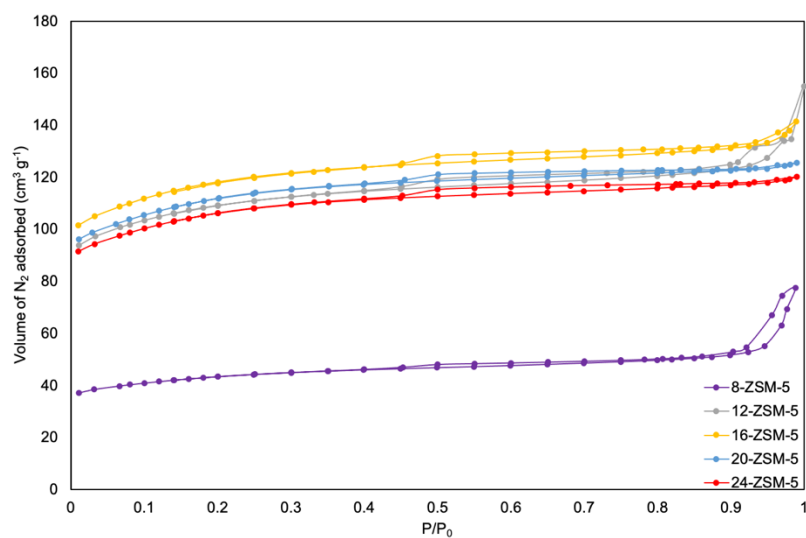


Figure S3. Nitrogen adsorption isotherms for zeolites synthesized with TPAOH and lignin (LZSM-5) during 4, 8, 12, 16, 20, and 24 h.

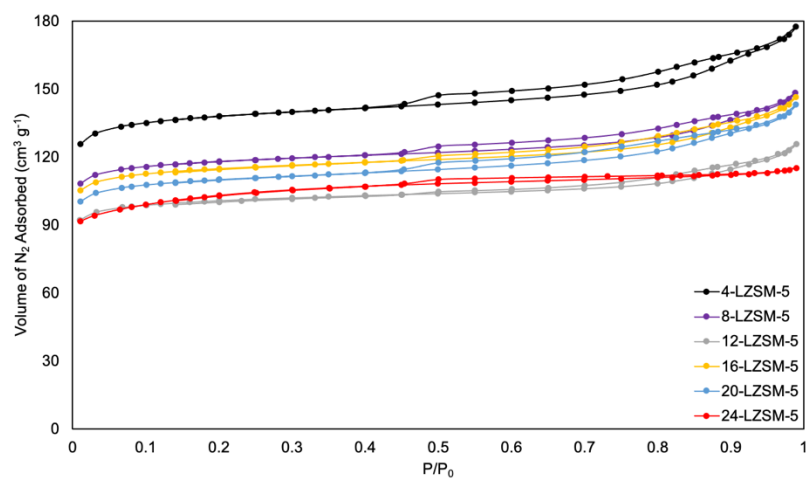


Table S1. Specific surface area (S_{BET}), microporous surface area (S_{micro}), external surface area (S_{ext}), and hierarchy factor (HT) for zeolites synthesized with TPAOH (ZSM-5) and a combination of TPAOH and lignin (LZSM-5) during 4, 8, 12, 16, 20, and 24 h.

Samples	S_{BET} (m^2/g)	S_{micro} (m^2/g)	S_{ext} (m^2/g)
4-ZSM-5	192	37	155
8-ZSM-5	143	90	53
12-ZSM-5	357	235	122
16-ZSM-5	387	251	136
20-ZSM-5	368	224	134
24-ZSM-5	348	224	124
4-LZSM-5	46	20	26
8-LZSM-5	86	10	76
12-LZSM-5	197	123	74
16-LZSM-5	318	208	110
20-LZSM-5	352	301	51
24-LZSM-5	334	258	76