technologies

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Supplementary Materials

Comparison of Different Hydrotalcite Solid Adsorbents on Adsorptive Desulfurization of Liquid Fuel Oil

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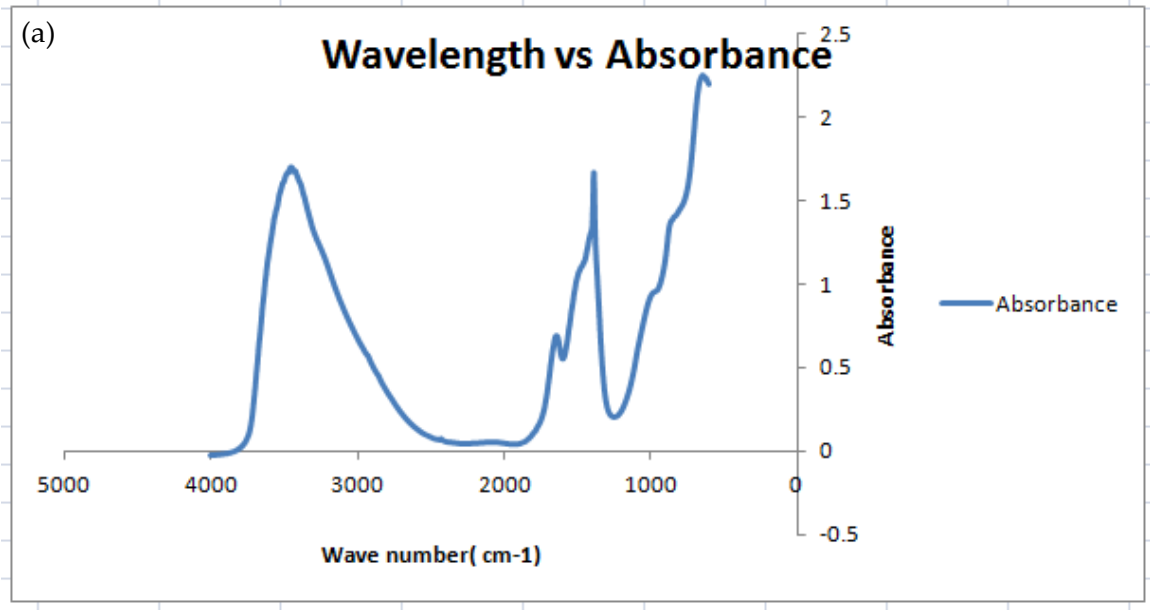
Contents:



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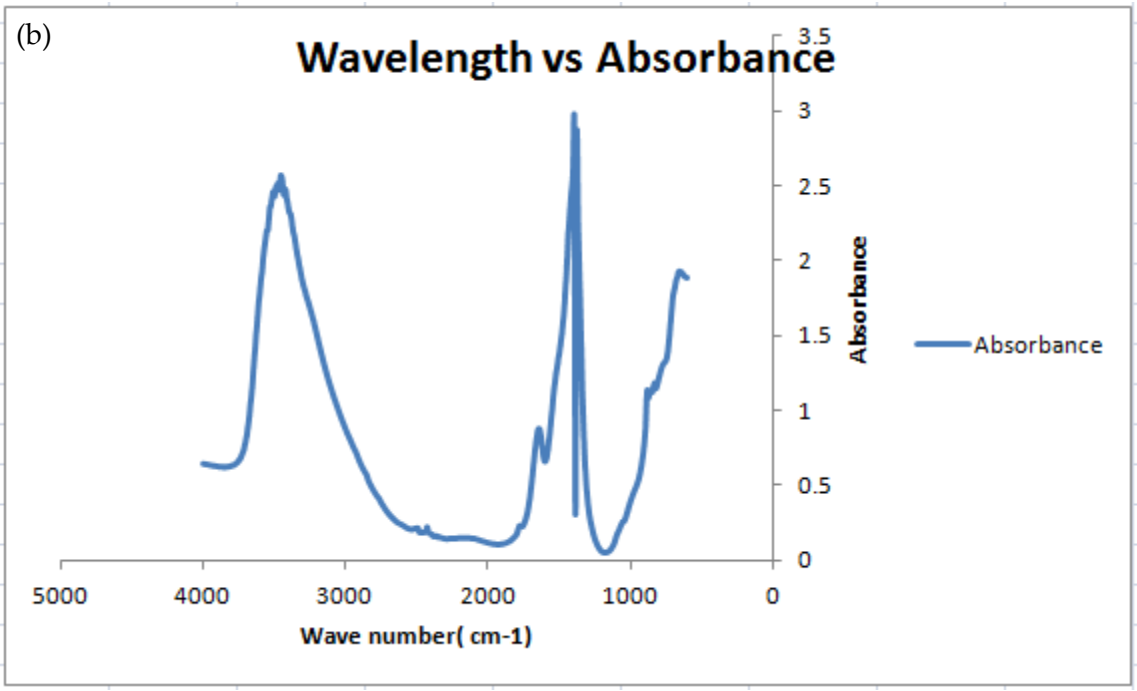
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1.5
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Absorbance
Absorbance
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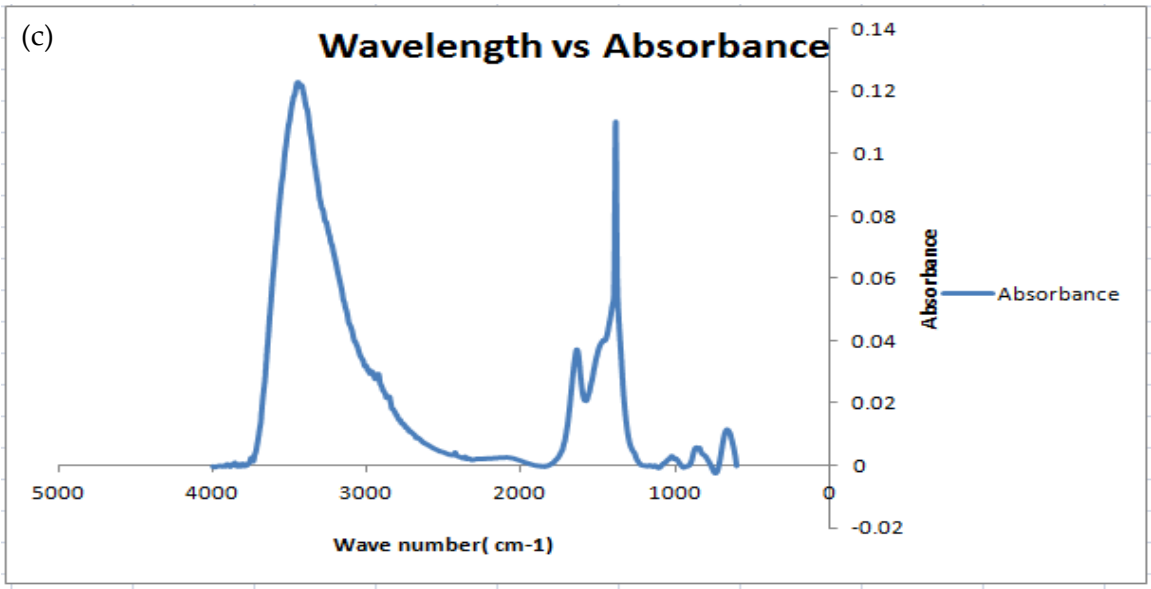
Wave number(cm-1)

(c)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Absorbance
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Wave number(cm-1)

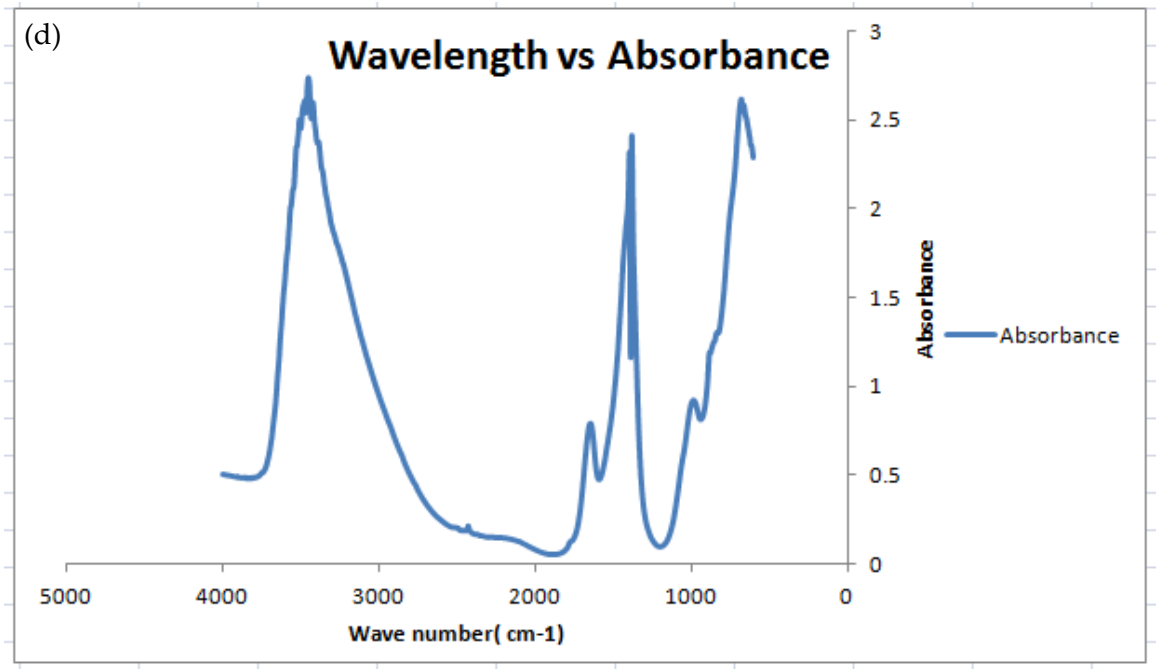
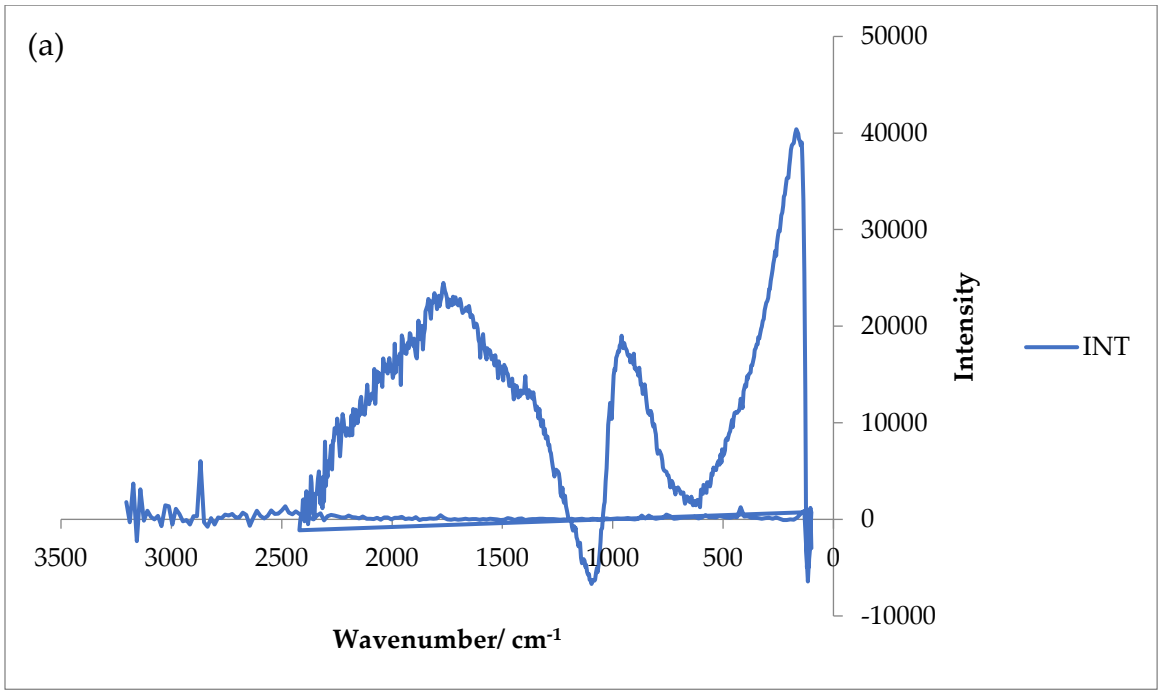
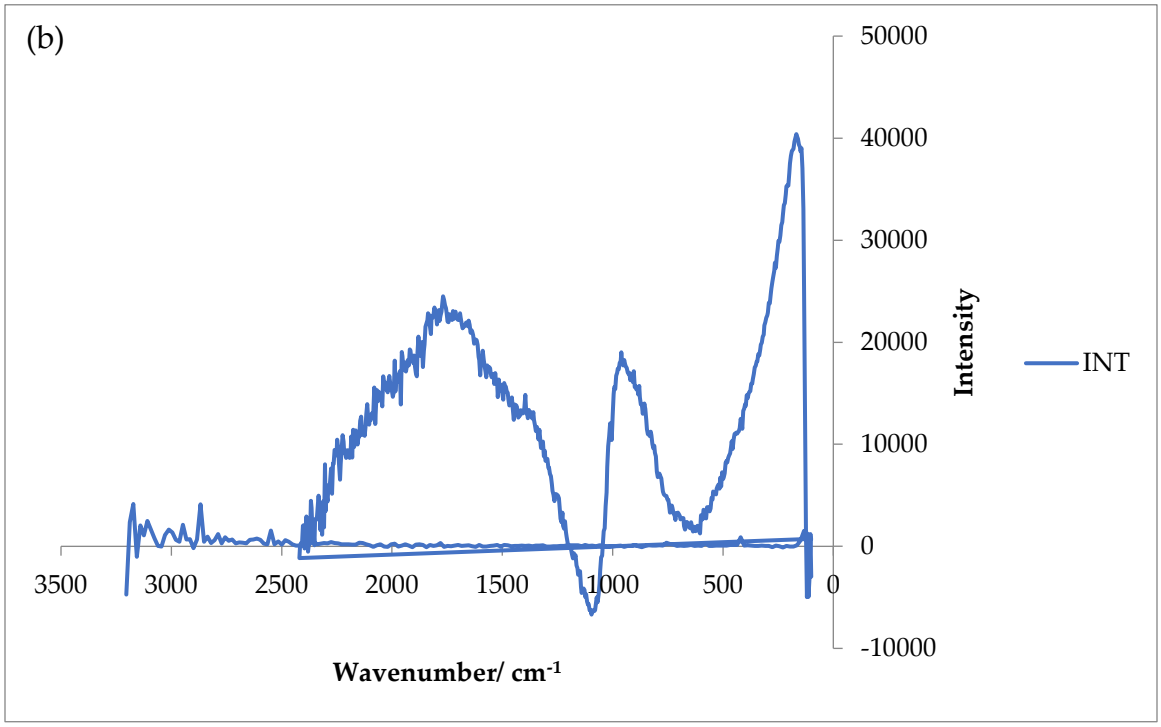


Figure S1. Infrared peaks of (a) Ni adsorbent; (b) Zn adsorbent (c) Ni and Zn adsorbent, (d) Zr adsorbent.

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20000
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0
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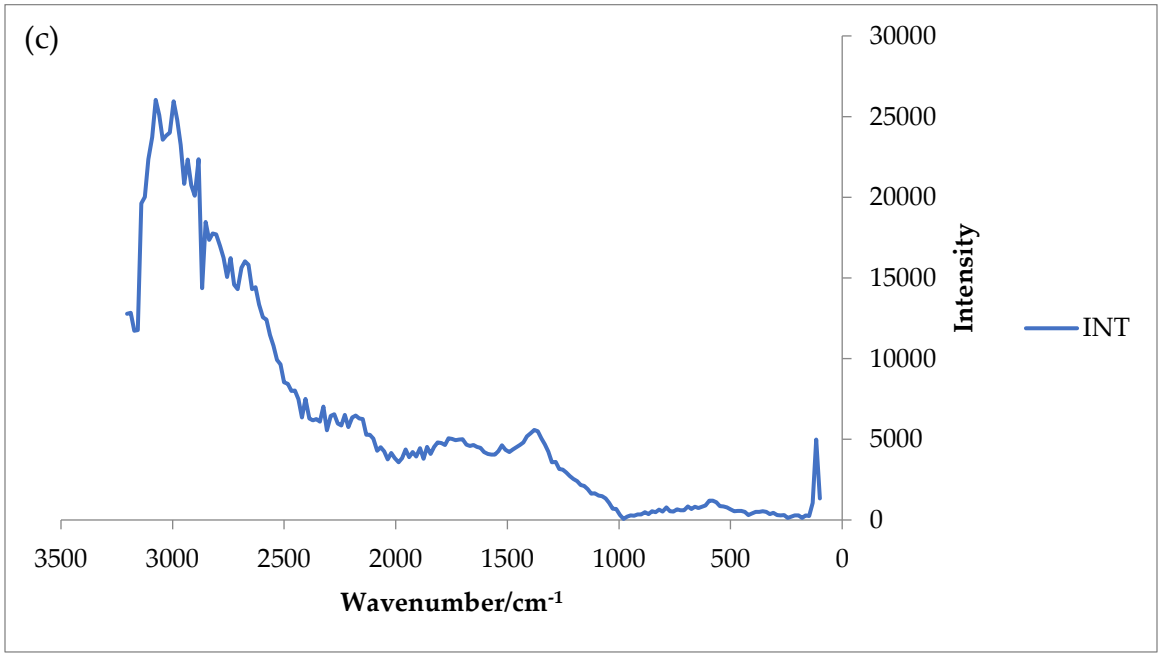
3000
2500
2000
1500
1000
500
0
Wavenumber/ cm-1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Wavenumber/cm-1

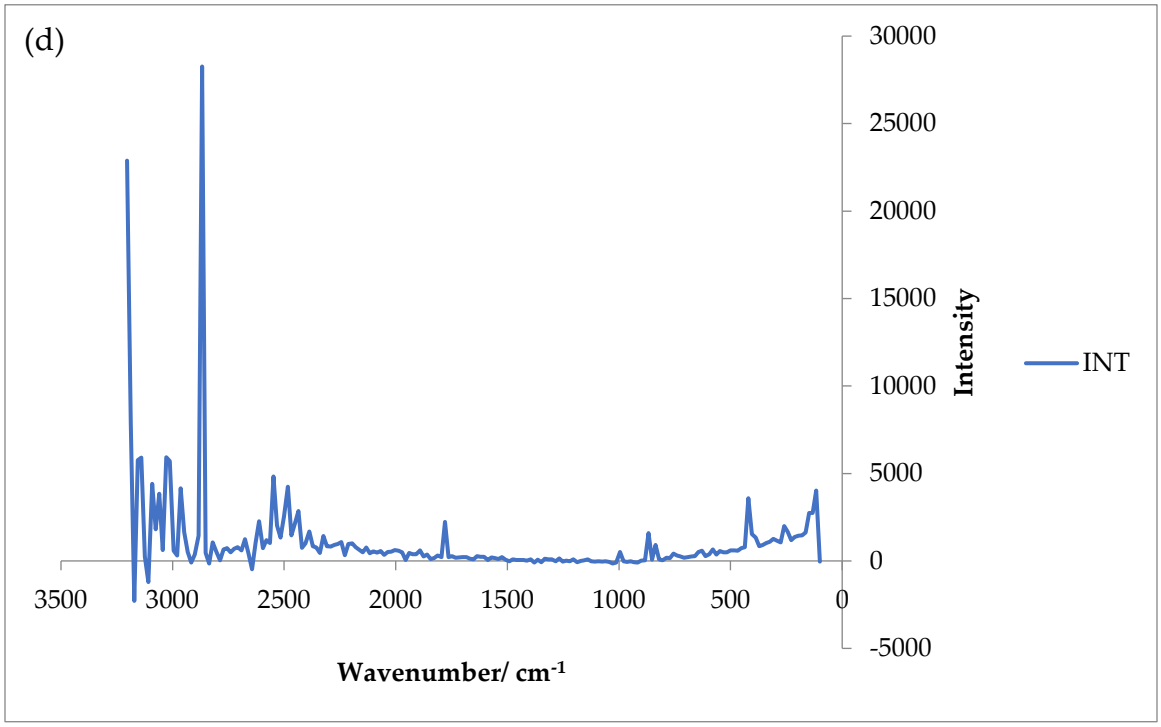

Figure S2. Raman peaks of calcined (a) Ni adsorbent; (b) Zn adsorbent (c) Ni and Zn adsorbent, (d) Zr adsorbent.

Table S1. Peak center, FWHM and crystal size from X-ray diffractograms.

Ni adsorbent			Ni & Zn adsorbent			Zn adsorbent			Zr adsorbent			Zr & Ni adsorbent		
Peak center (Xc)	**FWHM (w)**	**Crystal size (nm)**	**Peak center (Xc)**	**FWHM (w)**	**Crystal size (nm)**	**Peak center (Xc)**	**FWHM (w)**	**Crystal size (nm)**	**Peak center (Xc)**	**FWHM (w)**	**Crystal size (nm)**	**Peak center (Xc)**	**FWHM (w)**	**Crystal size (nm)**
23.1	1.5	5.8	29.3	0.5	17.1	19.6	0.8	10.0	20.8	0.6	13.5	24.2	1.2	7.2
35.2	1.5	5.8	36.3	0.5	16.0	34.5	0.9	9.7	24.0	0.7	12.8	26.2	1.0	8.5
60.8	0.8	12.5	31.7	0.6	14.8	38.7	0.5	19.3	26.9	0.7	12.5	45.9	0.4	21.7
62.1	1.0	9.8	48.0	0.9	10.6	42.8	0.3	28.2	52.6	0.8	12.2	51.3	0.4	21.7
65.7	0.9	10.9	56.5	0.5	17.5	60.2	0.7	13.1	58.3	0.9	10.7	58.3	0.8	12.5
72.0	1.0	10.1	68.1	1.3	7.9	61.4	1.1	8.8	63.9	0.7	13.2	58.3	0.4	24.3
Average		**9.1**			**14.0**			**14.9**			**12.5**			**16.0**
Std. dev.		**2.8**			**3.9**			**7.6**			**1.0**			**7.5**

Table S2. Composition of the five calcined adsorbents from EDAX.

Adsorbent Name	Element	Composition (wt%)	Atomic Ratio (at.%)
Ni supported adsorbent	Oxygen	33.40	50.24
	Magnesium	27.86	27.58
	Aluminum	10.76	9.6
	Nickel	26.23	10.75
Zn supported adsorbent	Oxygen	15.6	34.53
	Magnesium	16.94	24.66
	Aluminum	5.54	7.27
	Zinc	61.92	33.53
Ni and Zn supported adsorbent	Oxygen	27.05	45.69
	Magnesium	25.84	28.88
	Aluminum	8.97	9.03
	Nickel	21.68	9.98
	Zinc	16.69	6.90
Zr supported adsorbent	Oxygen	36.97	56.51
	Magnesium	22.78	22.92
	Aluminum	8.58	7.78
	Zirconium	26.28	7.05
Ni and Zr supported adsorbent	Oxygen	29.13	51.88
	Magnesium	16.53	19.38
	Aluminum	5.23	5.52
	Nickel	20.00	10.23
	Zirconium	23.23	7.25