Lampiran 1. Penentuan keasaman katalis dengan gravimetri.

1. Hasil penimbangan gelas arloji.

NO	Sampel	I (g)	II (g)	III (g)	Rata-rata (g)
1	ZA	25,8042	25,8039	25,8039	25,8040
2	ZS	27,0141	27,0143	27,0139	27,0141
3	ZNi-1	14,9827	14,9823	14,9826	14,9825
4	ZNi-2	14,7694	14,7700	14,7699	14,7698
5	ZNi-3	14,8550	14,8551	14,8551	14,8551
6	ZNi-4	15,4726	15,4723	15,4723	15,4724

2. Hasil penimbangan sampel dan gelas arloji sebelum mengadsorpsi NH_3.

NO	Sampel	I (g)	II (g)	III (g)	Rata-rata (g)
1	ZA	26,9292	26,9457	26,9456	26,9402
2	ZS	27,9984	28,0107	28,0107	28,0066
3	ZNi-1	16,0908	16,1041	16,1065	16,1005
4	ZNi-2	16,0348	16,0499	16,0522	16,0456
5	ZNi-3	16,0087	16,0202	16,0233	16,0174
6	ZNi-4	16,5338	16,5463	16,5484	16,5428

3. Hasil penimbangan sampel dan gelas arloji setelah mengadsorpsi NH_3.

NO	Sampel	I (g)	II (g)	III (g)	Rata-rata (g)
1	ZA	26,9550	26,9557	26,9559	26,9555
2	ZS	28,0211	28,0212	28,0212	28,0212
3	ZNi-1	16,1184	16,1186	16,1187	16,1186
4	ZNi-2	16,0666	16,0668	16,1670	16,0668
5	ZNi-3	16,0384	16,0385	16,0385	16,0385
6	ZNi-4	16,5501	16,5501	16,5501	16,5501

4. Penentuan keasaman

Penentuan keasaman menggunakan persamaan:

$$\text{Keasaman} = \frac{\frac{B - A}{BM\ NH_3}}{A} (\text{mmol.g}^{-1})$$

Keterangan: A = berat sampel sebelum mengadsorpsi NH_3.

B = berat sampel setelah mengadsorpsi NH_3.

NO	Sampel	A (g)	B (g)	B-A (g)	Keasaman (mmol.g^{-1})
1	ZA	1,1362	1,1515	0,0153	0,7921
2	ZS	0,9925	1,0071	0,0146	0,8653
3	ZNi-1	1,1180	1,1361	0,0181	0,9523
4	ZNi-2	1,2758	1,2970	0,0212	0,9774
5	ZNi-3	1,1623	1,1834	0,0211	1,0679
6	ZNi-4	1,0704	1,0777	0,0073	0,4012

Contoh perhitungan.

ZA atau zeolit alam.

A = (berat gelas arloji + berat sampel sebelum ads NH_3) – berat gelas arloji

A = 26,9402 g – 25,8040 g

A = 1,1362 g

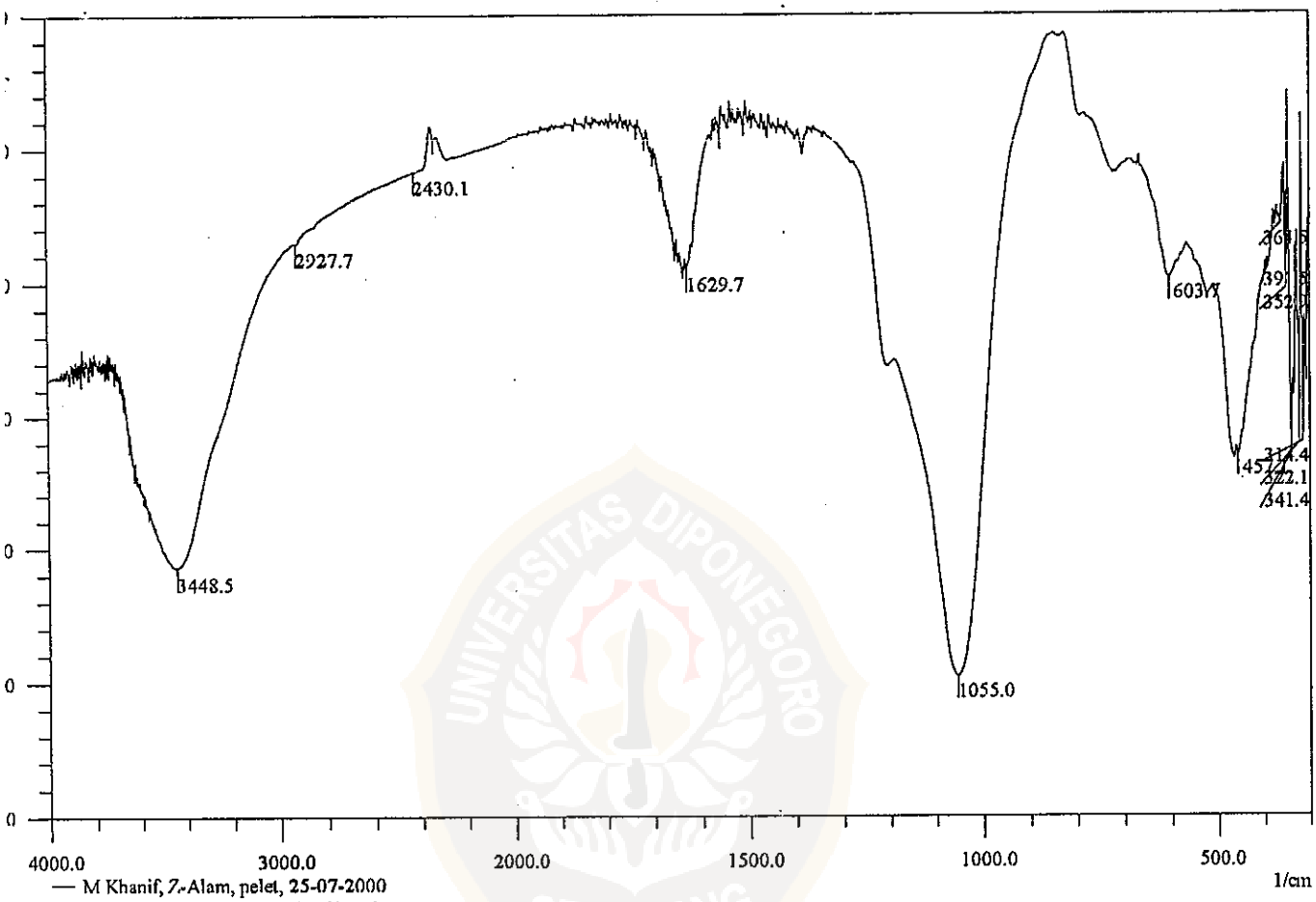
B = (berat gelas arloji + berat sampel setelah ads NH_3) – berat gelas arloji

B = 26,9555 g – 25,8040 g

B = 1,1515 g

$$\text{Keasaman} = \frac{\frac{(1,1515 - 1,1362) \times 1000\ \text{mg}}{17\ \text{mol/g}}}{1,1362\ \text{g}} = 0,7921\ \text{mmol/g}$$

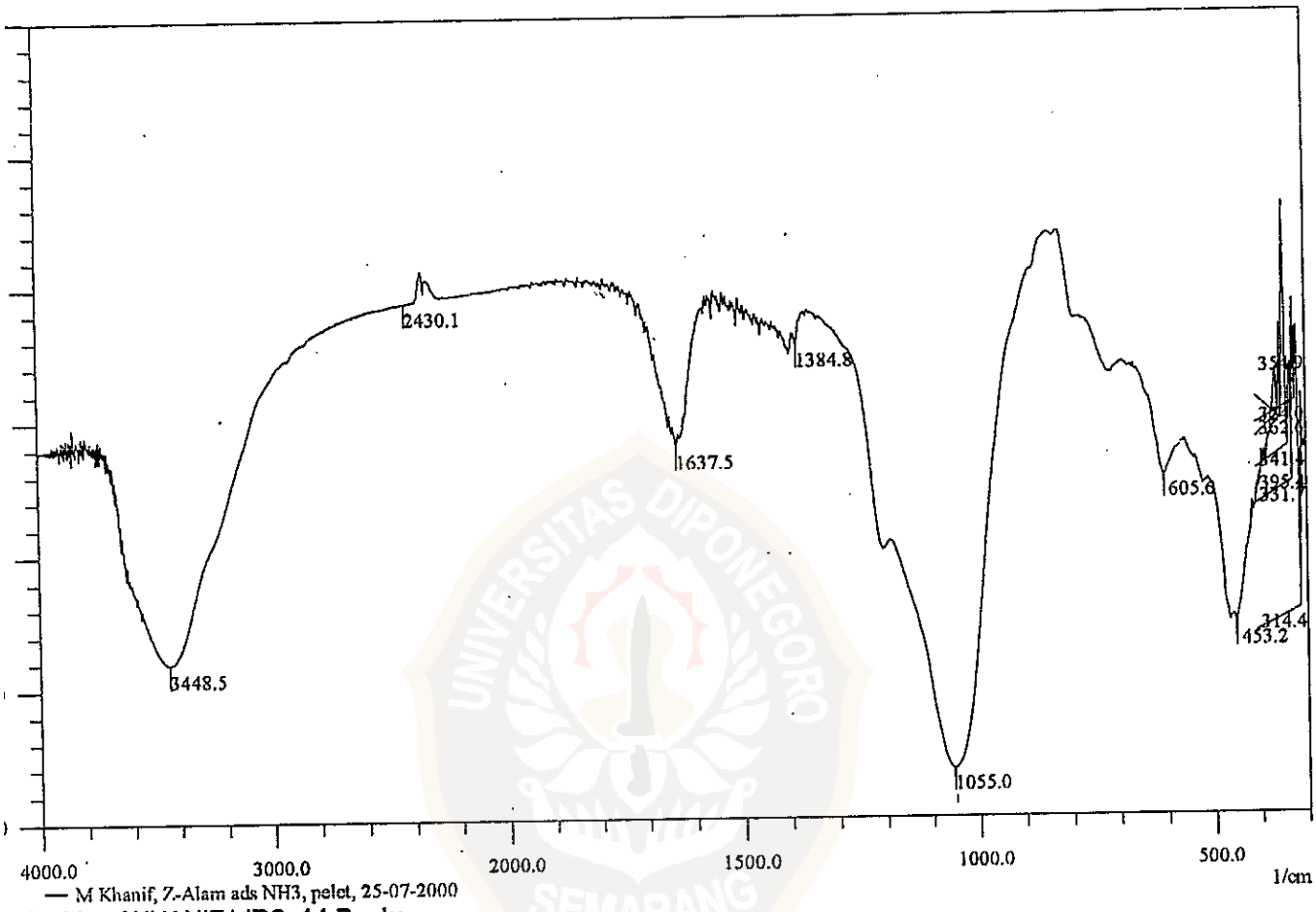
Lampiran 2. Gambar spektra FTIR zeolit alam sebelum mengadsorpsi NH_3



Peaktable of KHANIF.IRS, 13 Peaks
Threshhold: 80, Noise: 2, No Range Selection

Nr.	Pos. (1/cm)	Inten. (%T)
	314.4	27.958
	322.1	27.834
	341.4	27.042
	352.9	39.421
	364.5	44.213
	391.5	41.139
	457.1	27.080
	603.7	40.295
	1055.0	10.433
10	1629.7	40.982
11	2430.1	48.242
12	2927.7	42.923
13	3448.5	18.520

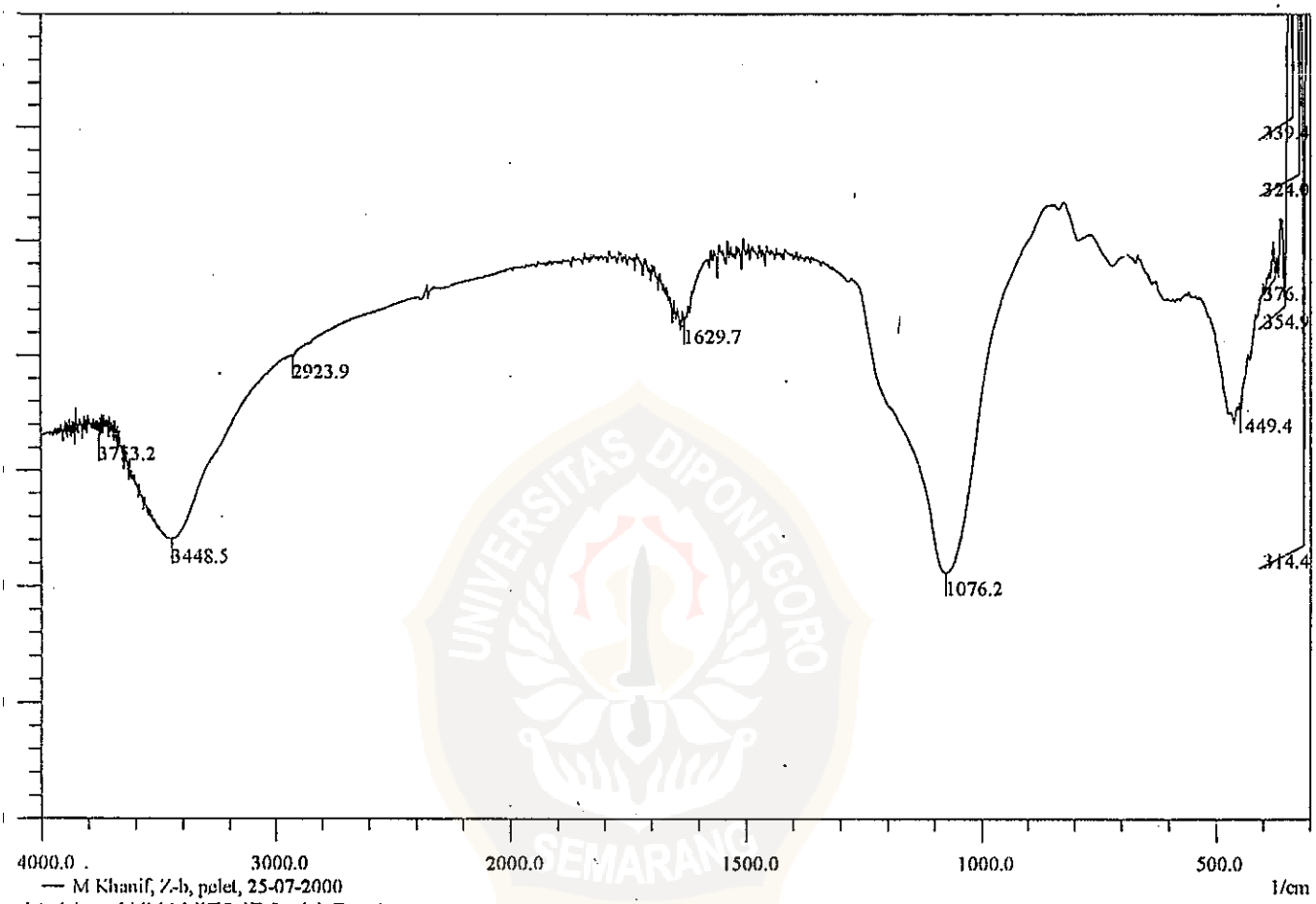
Lampiran 3. Gambar spektra FTIR zeolit alam sesudah mengadsorpsi NH_3



eaktable of KHANIF1.IRS, 14 Peaks
nreshhold: 80, Noise: 2, No Range Selection

r.	Pos. (1/cm)	Inten. (%T)
	314.4	15.360
	324.0	30.795
	331.7	24.781
	341.4	27.392
	354.9	29.408
	362.6	29.772
	395.4	26.294
	453.2	14.244
	605.6	25.397
0	1055.0	3.612
1	1384.8	35.346
2	1637.5	27.832
3	2430.1	38.720
4	3448.5	11.867

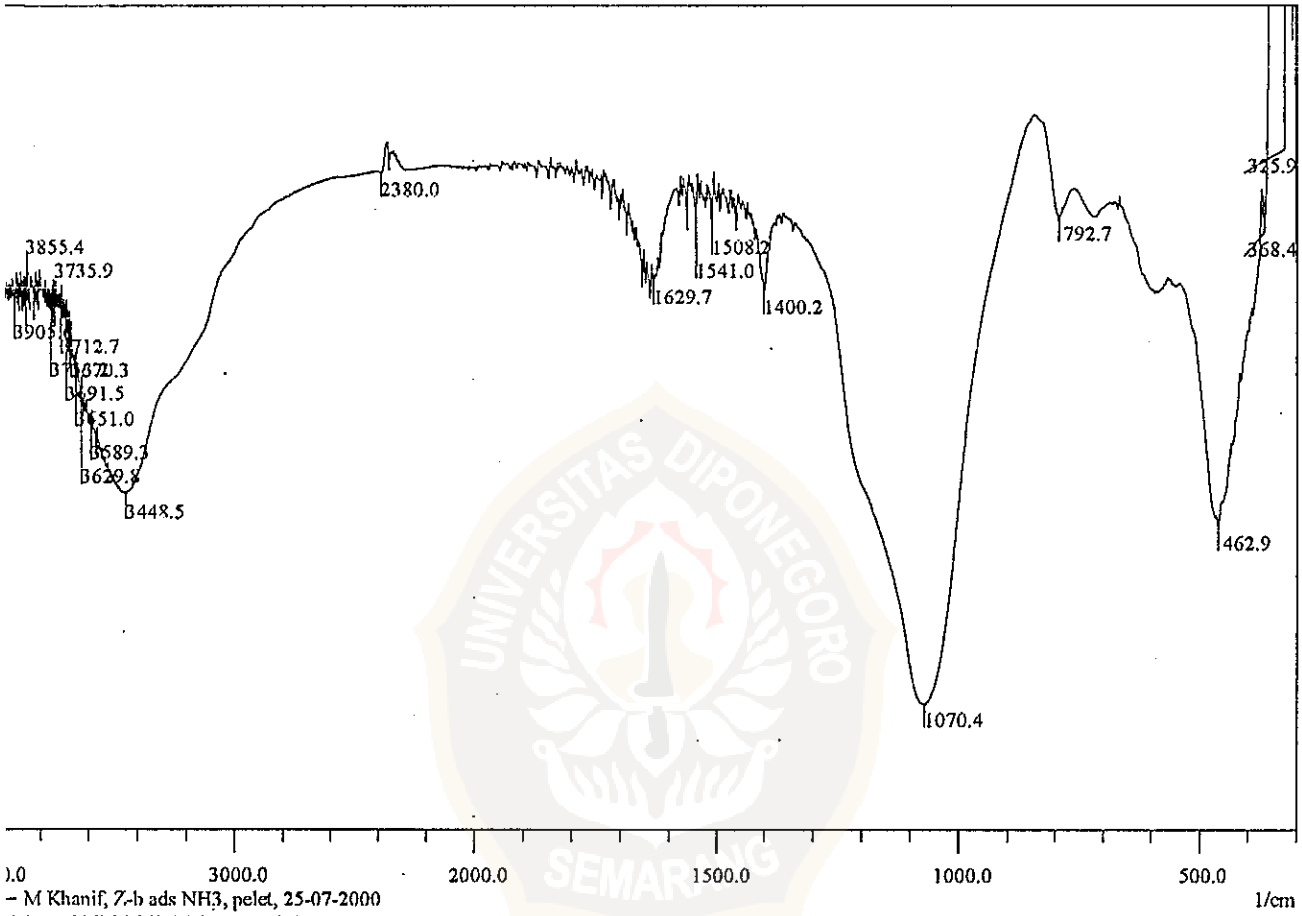
Lampiran 4. Gambar Spektra FTIR katalis Ni zeolit berkadar logam Ni terkecil sebelum mengadsorpsi NH_3



eaktable of KHANIF2.IRS, 11 Peaks
ıreshhold: 80, Noise: 2, No Range Selection

	Pos. (1/cm)	Inten. (%T)
	314.4	23.615
	324.0	55.807
	339.4	60.904
	354.9	44.341
	376.1	46.758
	449.4	35.253
	1076.2	21.229
	1629.7	43.056
	2923.9	39.977
)	3448.5	23.945
	3753.2	32.782

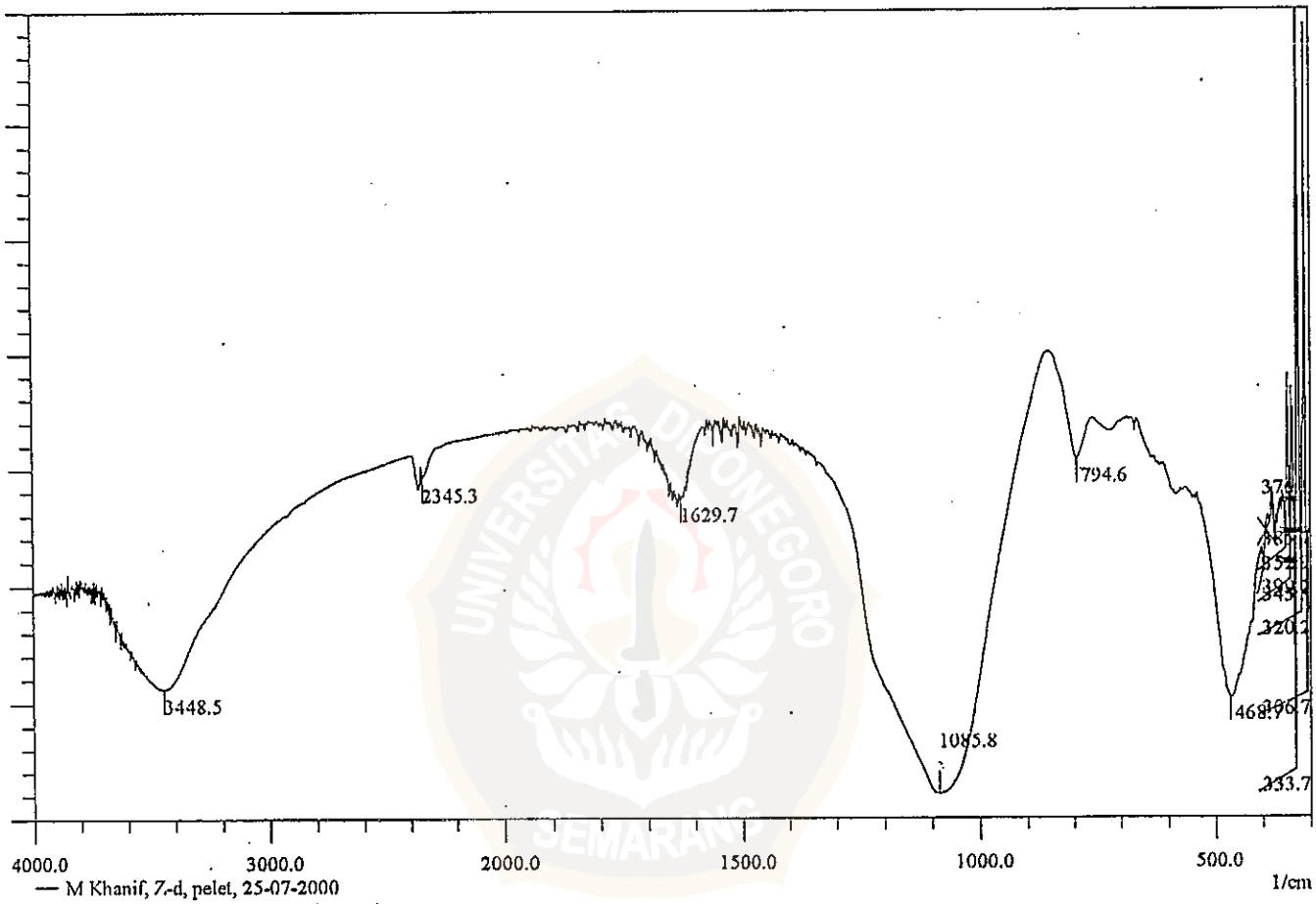
Lampiran 5. Gambar spektra FTIR katalis Ni zeolit berkadar logam Ni terkecil setelah mengadsorpsi NH_3



– M Khanif, Z-b ads NH3, pelet, 25-07-2000
able of KHANIF5.IRS, 21 Peaks
hold: 80, Noise: 2, No Range Selection

Pos. (1/cm)	Inten. (%T)			
325.9	57.711	14	3651.0	36.138
368.4	50.661	15	3670.3	40.325
462.9	25.677	16	3691.5	41.706
792.7	51.982	17	3712.7	42.400
1070.4	10.667	18	3735.9	42.861
1400.2	45.775	19	3753.2	42.628
1508.2	50.863	20	3855.4	42.618
1541.0	52.194	21	3905.6	43.612
1629.7	46.658			
2380.0	55.712			
3448.5	28.244			
3589.3	33.264			
3629.8	34.747			

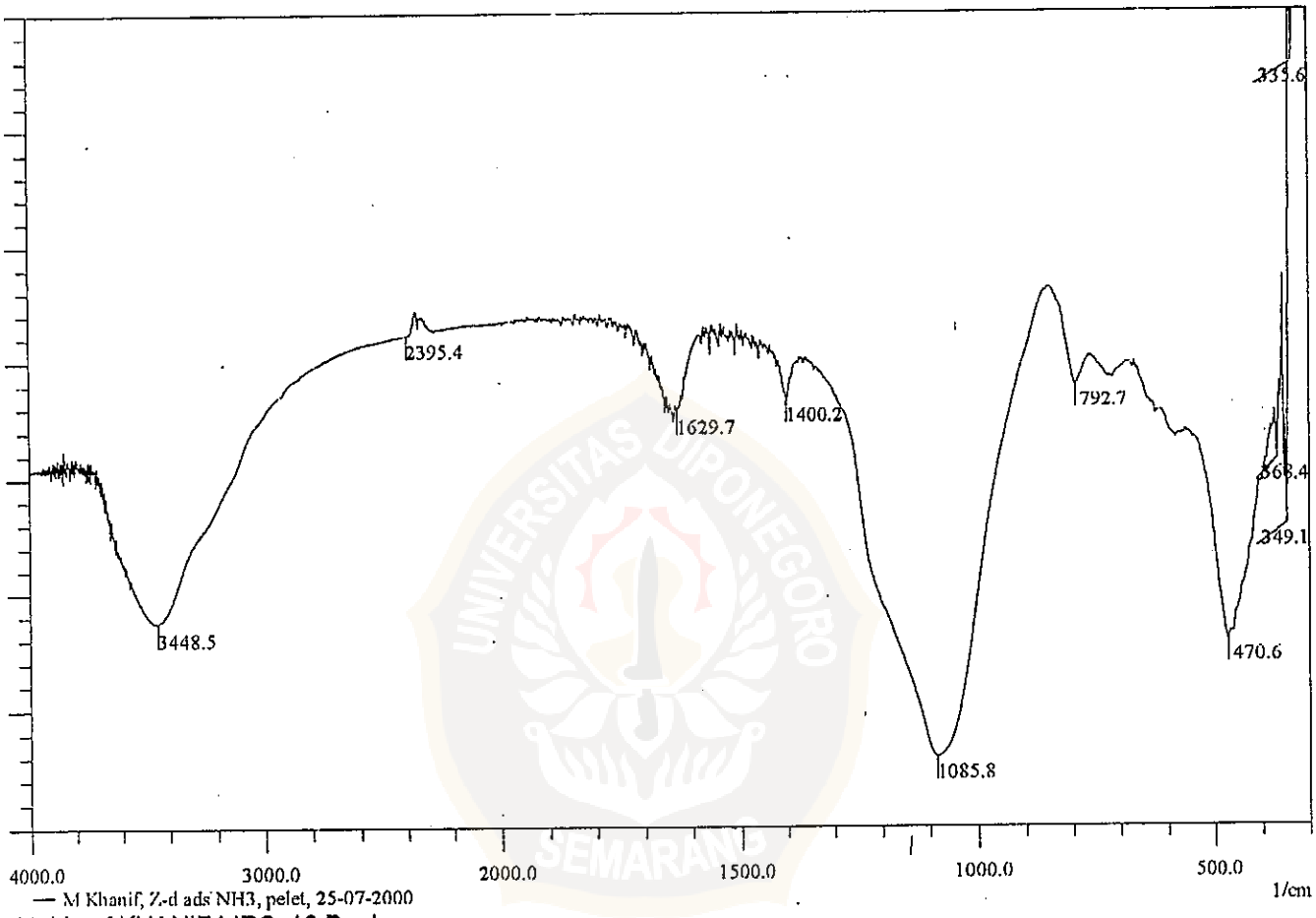
Lampiran 6. Gambar spektra FTIR katalis Ni zeolit berkadar logam Ni terbesar sebelum mengadsorpsi NH_3



aktable of KHANIF3.IRS, 14 Peaks
reshhold: 80, Noise: 2, No Range Selection

Pos. (1/cm)	Inten. (%T)
306.7	10.734
320.2	17.531
333.7	4.118
343.3	20.372
352.9	23.024
376.1	23.544
385.7	25.115
399.2	21.248
468.7	10.323
794.6	30.704
1085.8	2.062
1629.7	27.376
2345.3	29.102
3448.5	11.162

Lampiran 7. Gambar spektra FTIR katalis Ni zeolit berkadar logam Ni terbesar sesudah mengadsorpsi NH_3



aktable of KHANIF4.IRS, 10 Peaks
reshhold: 80, Noise: 2, No Range Selection

Pos. (1/cm)	Inten. (%T)
335.6	65.568
349.1	25.779
368.4	31.399
470.6	15.863
792.7	37.874
1085.8	5.945
1400.2	36.672
1629.7	35.638
2395.4	42.277
3448.5	17.434

Lampiran 8. Hasil analisa kadar Ni dalam katalis dengan AAS

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Jurusan Kimia Fakultas Matematika dan Ilmu Pengetahuan Alam
Universitas Gadjah Mada
Sekip Utara Kotak Pos BLS 21 Yogyakarta 55281 telp. 0274-902740 faks. 0274-513339

HASIL ANALISIS

No. : 118/HA/AAS-KA/08/00
Nama pengirim : Muhammad Khanif (UNDIP Semarang)
Sampel : Ni Zeolit Sejumlah: 5
Penentuan : Ni
Tanggal analisis : 1 Agustus 2000

No.	Parameter	Kode sampel	Hasil Pengukuran (ppm)			Metode
			I	II	III	
1.	Ni	2 standar	2916,014	2956,173	2922,707	AAS
2.	"	2(b) kalibrasi	2818,057	2863,755	2837,642	"
3.	"	2(c) impreg.	2943,319	2949,953	2930,051	"
4.	"	2(d) exchange	3186,898	3193,598	3180,198	"
5.	"	2(e) impreg.	3001,545	3014,866	2974,904	"

Demikian, harap dapat dipergunakan sebagaimana mestinya.

Yogyakarta, 2 Agustus 2000
Operator,

Pribadi Prasetyo
NIP. 130811390

Lampiran 9. Spektra GC senyawa Benzena

* ATT 2 ^ 5 @
* AN SIGNAL. BNC
RUN # 1283 JUL 30, 2000 23 : 51 : 05
START

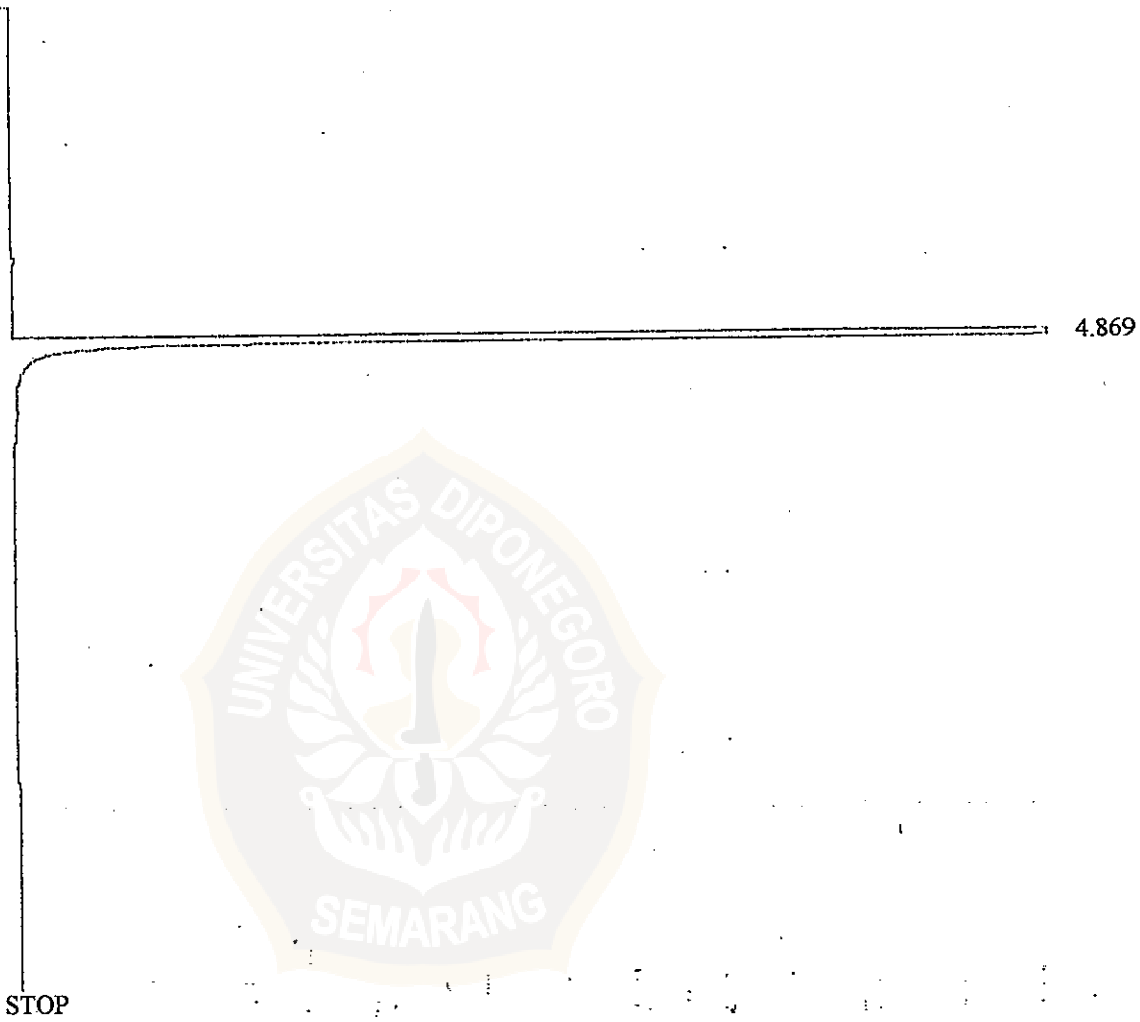
Closing signal file M : SIGNAL. BNA
* AREA%
RUN # 1283 JUL 30, 2000 23 : 51 :05
SIGNAL FILE : M : SIGNAL. BNA
AREA%

RT	AREA	TYPE	WIDTH	AREA%
4.875	4878064	PB	.054	100.00000

TOTAL AREA = 4878064
MUL FACTOR = 1.0000E + 00

Lampiran 10. Spektra GC senyawa hasil uji katalis

* ATT 2 ^ 4 @
* RUN # 1284 JUL 31, 2000 00 : 11 : 09
START



Closing signal file M : SIGNAL. BNC

* AREA%

RUN# 1284 JUL 31, 2000 00 : 11 : 09

SIGNAL FILE : M : SIGNAL.BNC

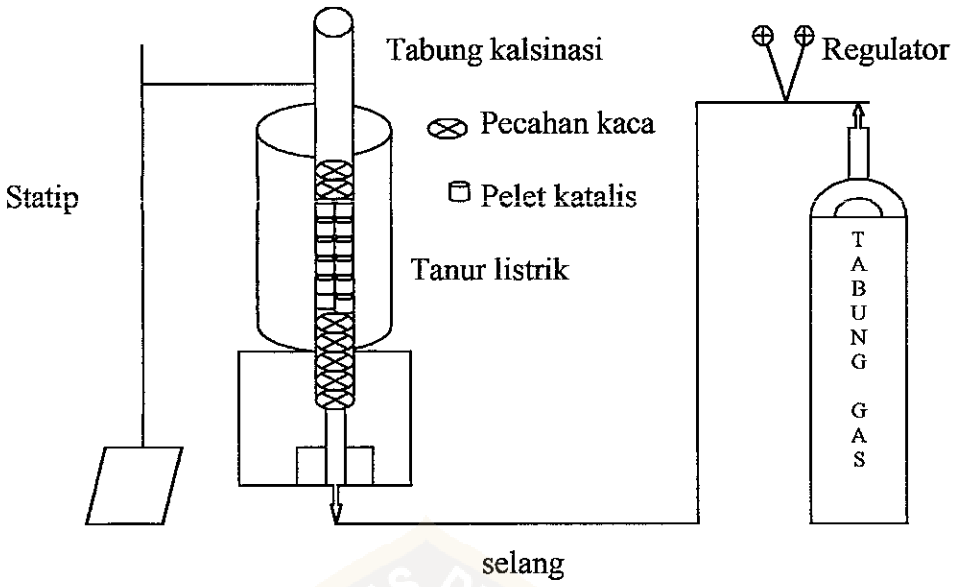
AREA%

RT	AREA	TYPE	WIDTH	AREA%
4.869	3747294	PB	.050	100.00000

TOTAL AREA = 3747294

MUL FACTOR = 1.0000E + 00

Lampiran 11. Skema kalsinasi sistem alir



Skema kalsinasi sistem alir