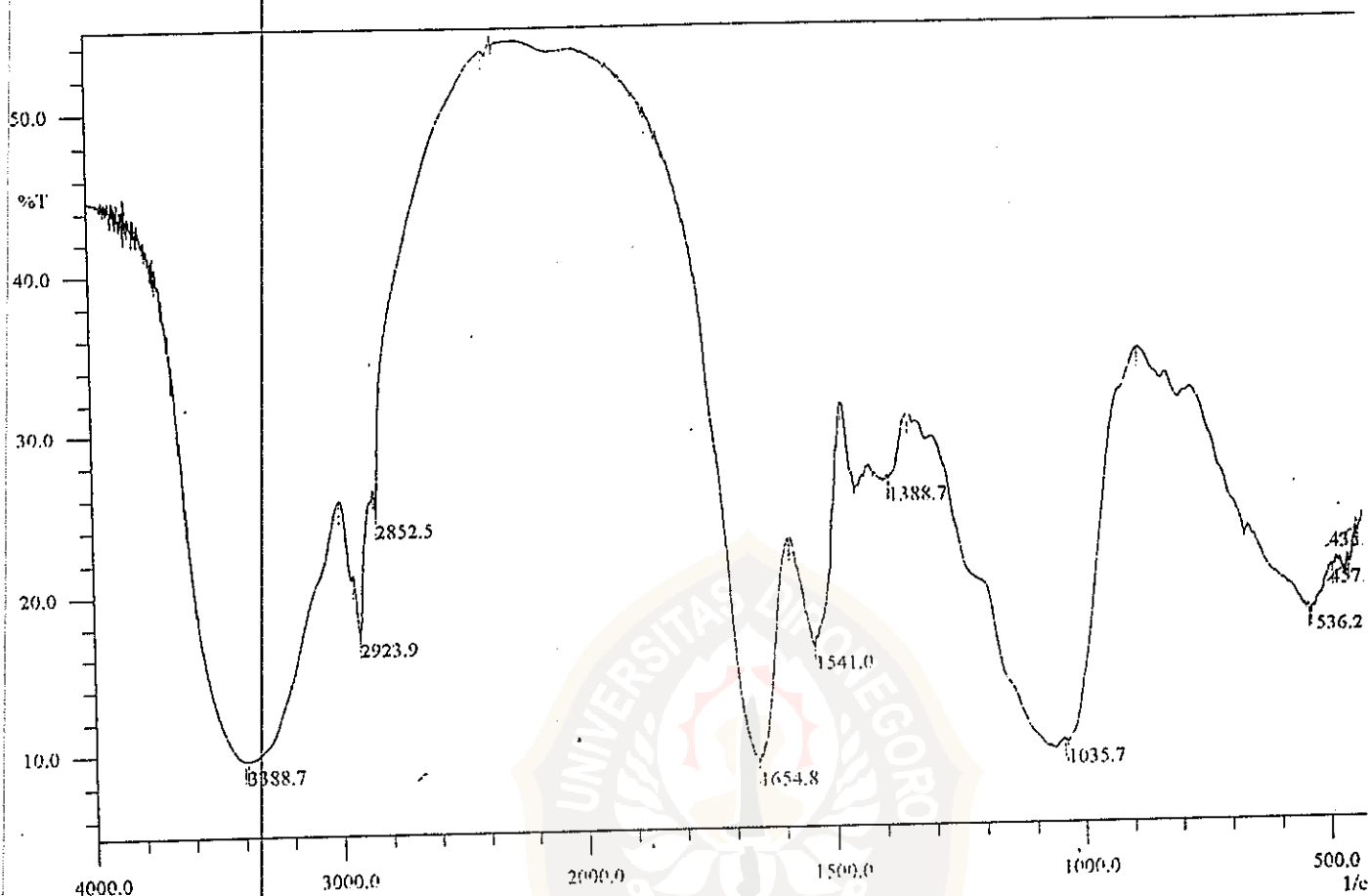
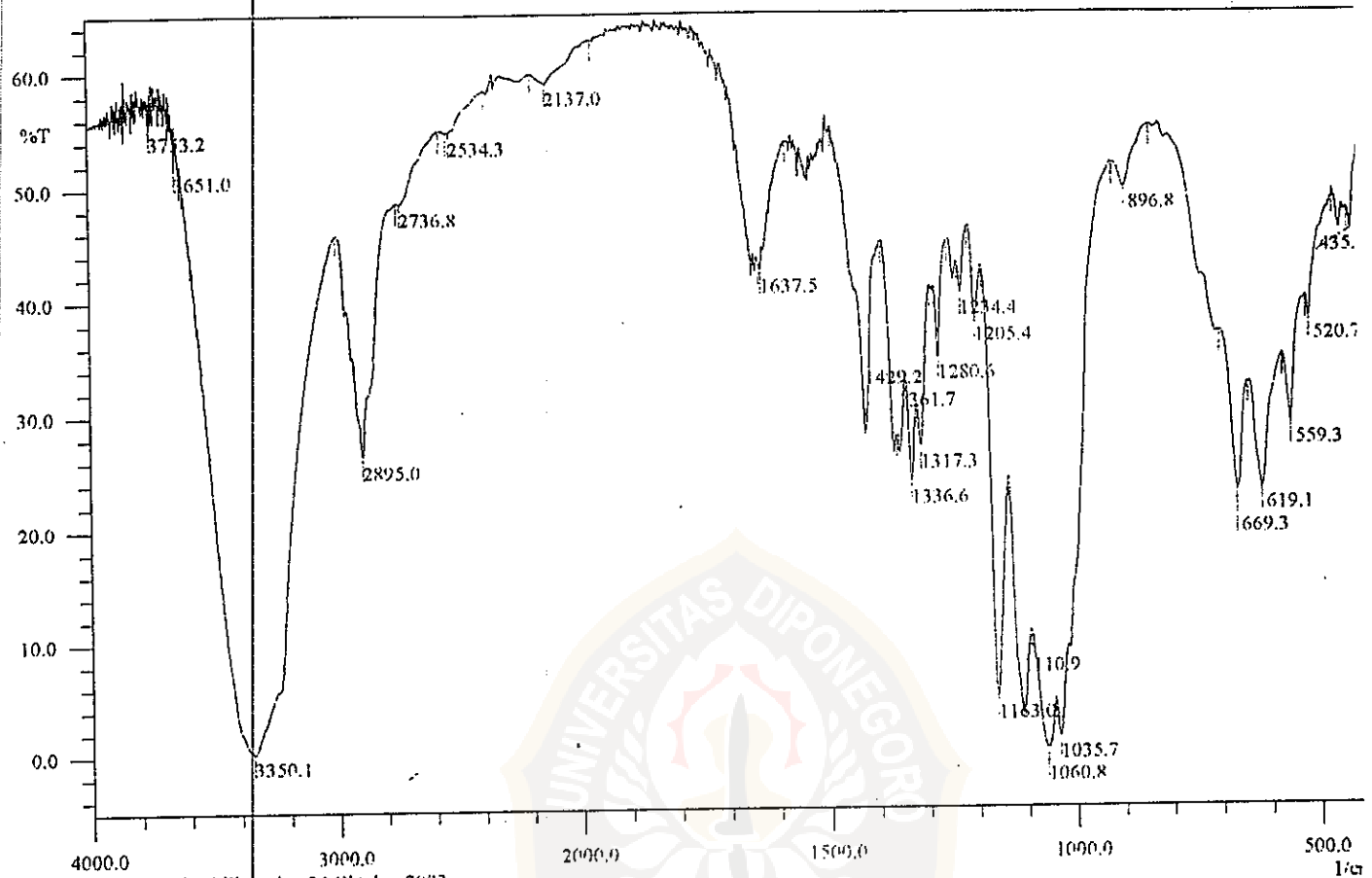


Lampiran A. Spektra IR *nata de soya* dengan zat warna hari ke-2

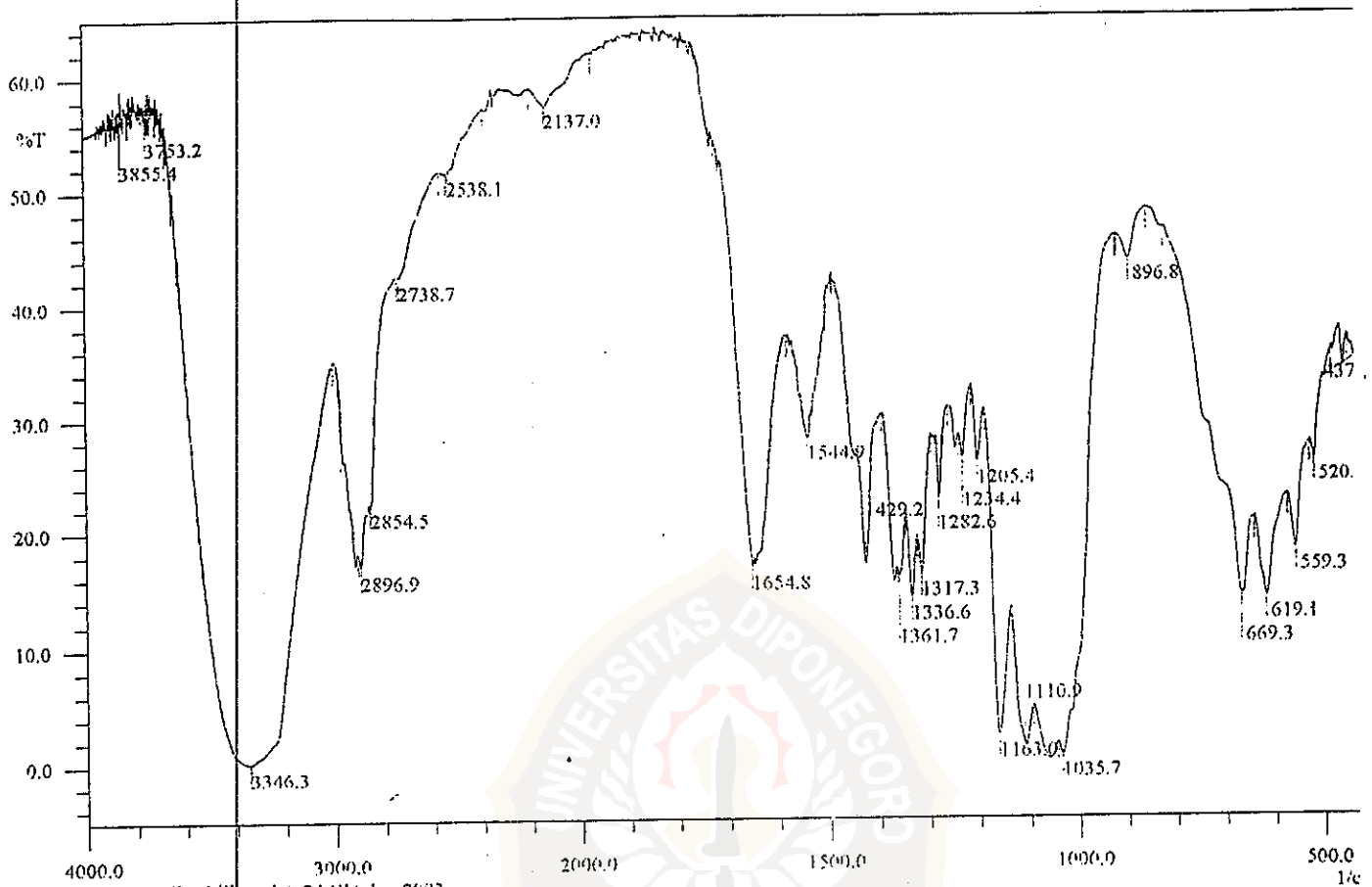
— Nata-2hr. Lilis. pelct, 24 Oktober 2003  
 Peaktable of LILIS4.IRS, 10 Peaks  
 Threshold: 80, Noise: 2, No Range Selection

| Nr. | Pos. (1/cm) | Inten. (%T) |
|-----|-------------|-------------|
| 1   | 435.9       | 23.225      |
| 2   | 457.1       | 20.982      |
| 3   | 536.2       | 18.064      |
| 4   | 1035.7      | 9.920       |
| 5   | 1388.7      | 26.515      |
| 6   | 1541.0      | 16.108      |
| 7   | 1654.8      | 8.908       |
| 8   | 2852.5      | 24.847      |
| 9   | 2923.9      | 17.445      |
| 10  | 3388.7      | 9.592       |

Lampiran B. Spektra IR *nata de soya* dengan zat warna hari ke-4

— Nata-4hr. Lilis, pelct, 24 Oktober 2003  
 Peaktable of LILIS.IRS, 25 Peaks  
 Threshold: 80, Noise: 3, No Range Selection

| Nr. | Pos. (1/cm) | Inten. (%T) |
|-----|-------------|-------------|
| 1   | 435.9       | 45.669      |
| 2   | 520.7       | 37.901      |
| 3   | 559.3       | 28.752      |
| 4   | 619.1       | 23.120      |
| 5   | 669.3       | 22.848      |
| 6   | 896.8       | 49.578      |
| 7   | 1035.7      | 1.162       |
| 8   | 1060.8      | 0.181       |
| 9   | 1110.9      | 2.826       |
| 10  | 1163.0      | 4.713       |
| 11  | 1205.4      | 38.000      |
| 12  | 1234.4      | 40.279      |
| 13  | 1280.6      | 34.680      |
| 14  | 1317.3      | 26.873      |
| 15  | 1336.6      | 23.830      |
| 16  | 1361.7      | 26.278      |
| 17  | 1429.2      | 28.041      |
| 18  | 1637.5      | 42.330      |
| 19  | 2137.0      | 59.008      |
| 20  | 2534.3      | 54.769      |
| 21  | 2736.8      | 48.558      |
| 22  | 2895.0      | 26.395      |
| 23  | 3350.1      | 0.266       |
| 24  | 3651.0      | 51.923      |
| 25  | 3753.2      | 55.460      |

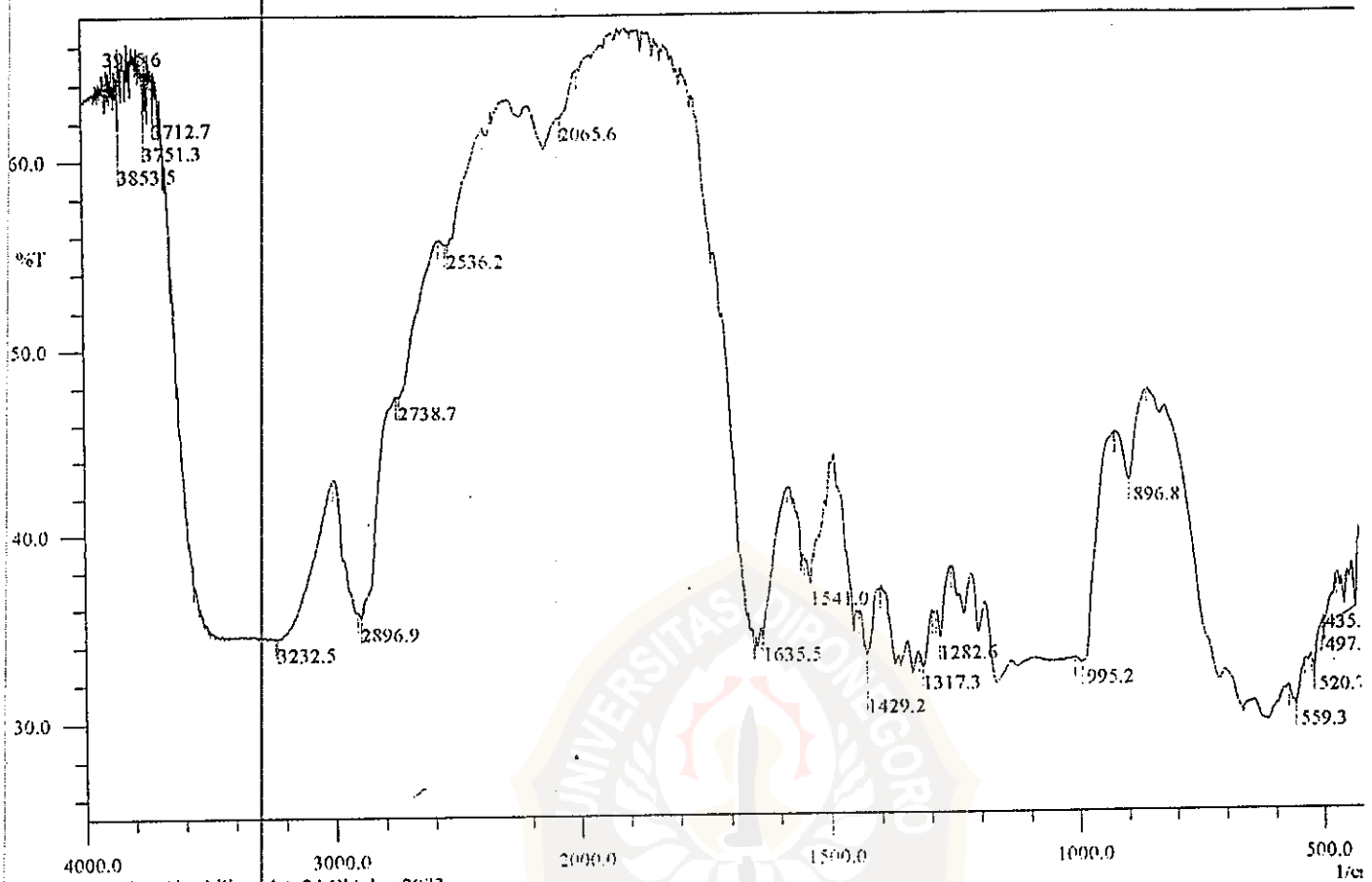
Lampiran C. Spektra IR *nata de soya* dengan zat warna hari ke-6

— Nata-6hr. Lilis. p.cct. 24 Oktober 2003

Peaktbale of LILIS1.IRS, 26 Peaks

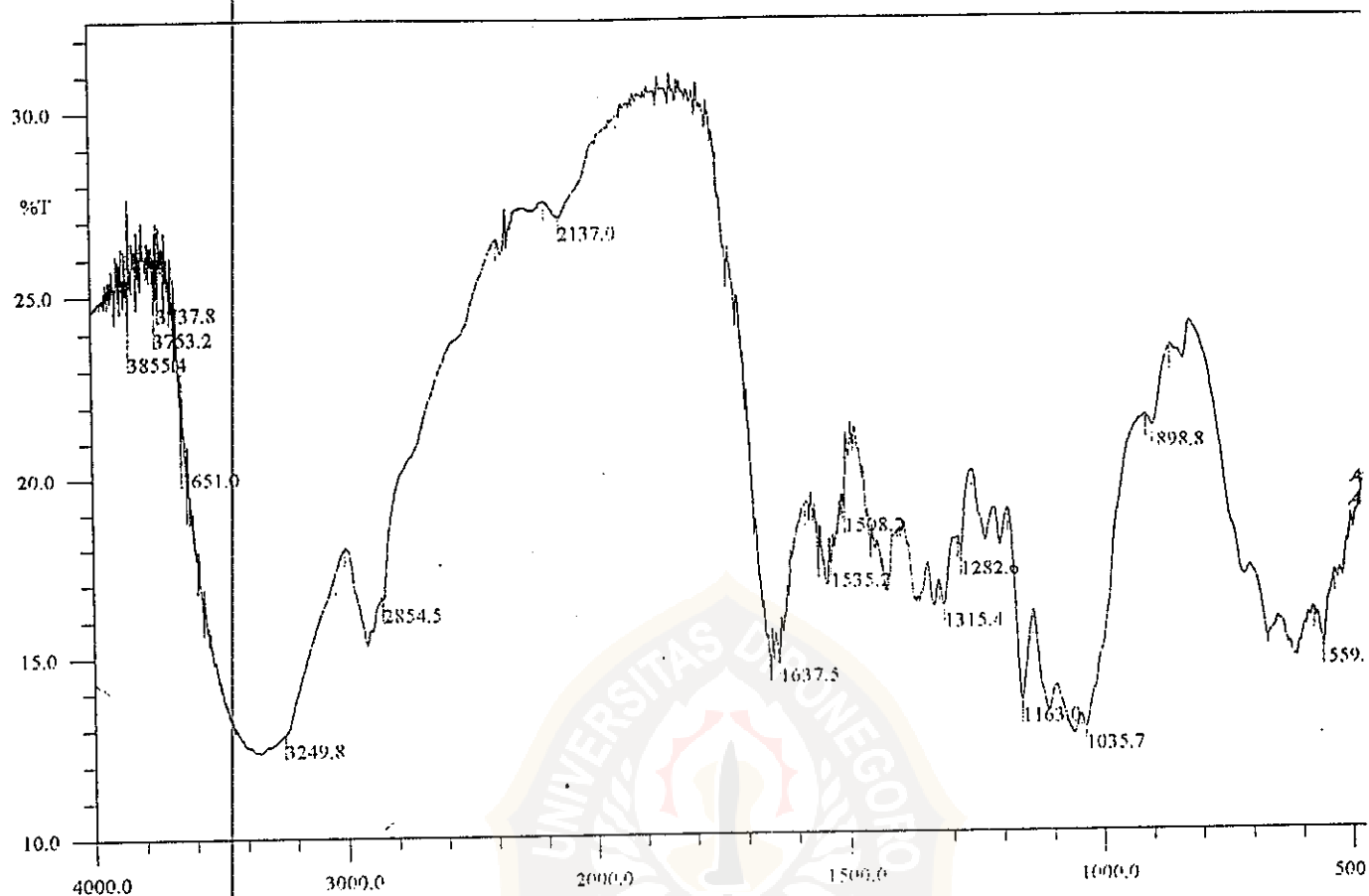
Threshold: 80, Noise: 3, No Range Selection

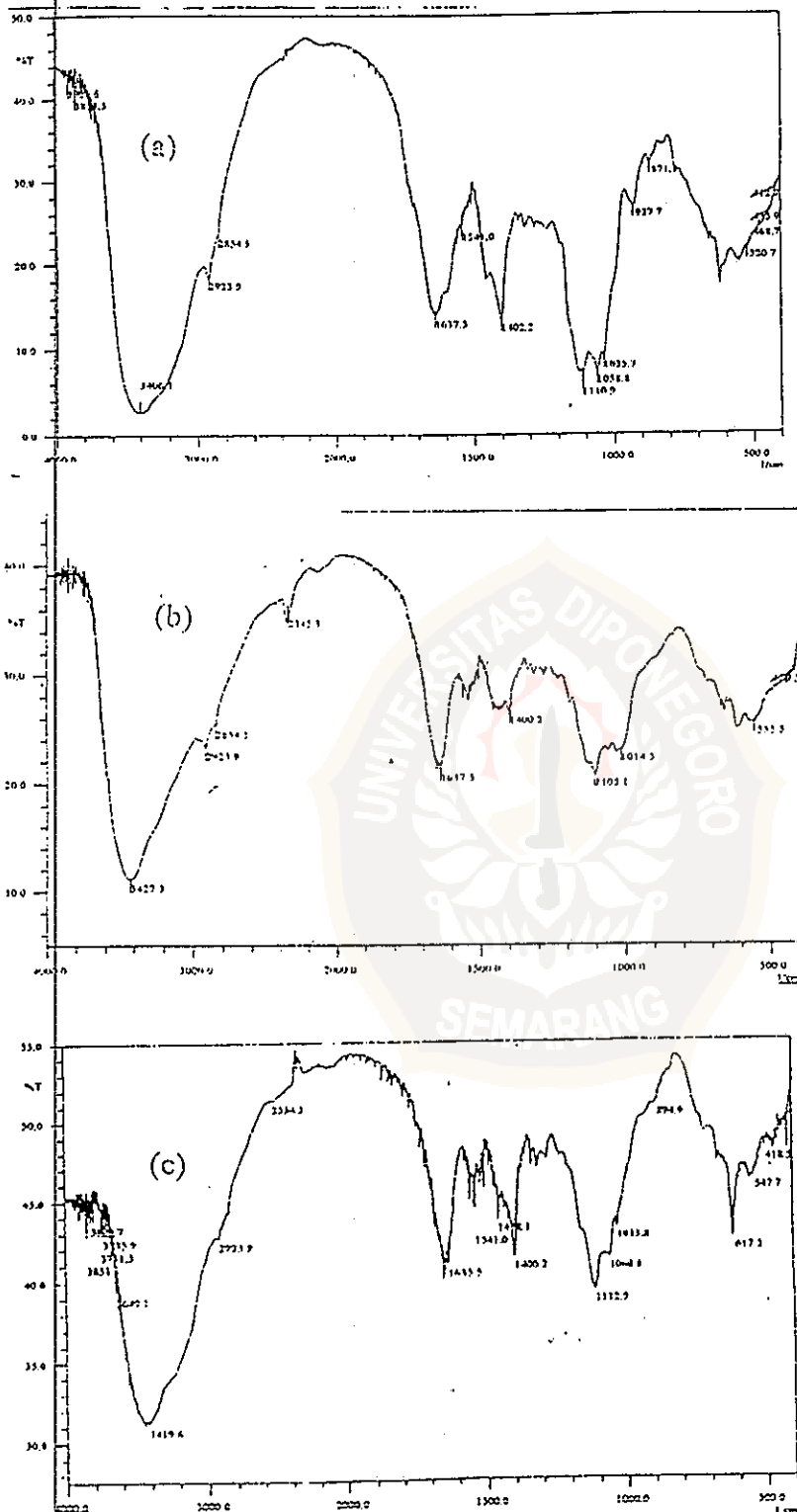
| Nr. | Pos. (1/cm) | Inten. (%T) |
|-----|-------------|-------------|
| 1   | 437.8       | 34.782      |
| 2   | 520.7       | 25.926      |
| 3   | 559.3       | 18.094      |
| 4   | 619.1       | 14.002      |
| 5   | 669.3       | 14.177      |
| 6   | 896.8       | 43.597      |
| 7   | 1035.7      | 0.520       |
| 8   | 1110.9      | 1.231       |
| 9   | 1163.0      | 2.233       |
| 10  | 1205.4      | 25.860      |
| 11  | 1234.4      | 26.215      |
| 12  | 1282.6      | 22.987      |
| 13  | 1317.3      | 16.150      |
| 14  | 1336.6      | 14.077      |
| 15  | 1361.7      | 15.934      |
| 16  | 1429.2      | 17.004      |
| 17  | 1544.9      | 28.104      |
| 18  | 1654.8      | 16.789      |
| 19  | 2137.0      | 57.358      |
| 20  | 2538.1      | 51.443      |
| 21  | 2738.7      | 42.354      |
| 22  | 2854.5      | 22.390      |
| 23  | 2896.9      | 16.960      |
| 24  | 3346.3      | 0.199       |
| 25  | 3753.2      | 55.226      |
| 26  | 3855.4      | 53.922      |

Lampiran D. Spektra IR *nata de soya* dengan zat warna hari ke-8

— Nata-Shr. Lilis. pellet. 24 Oktober 2003  
 Peaktable of LILIS2.IRS, 20 Peaks  
 Threshold: 80, Noise: 2, No Range Selection

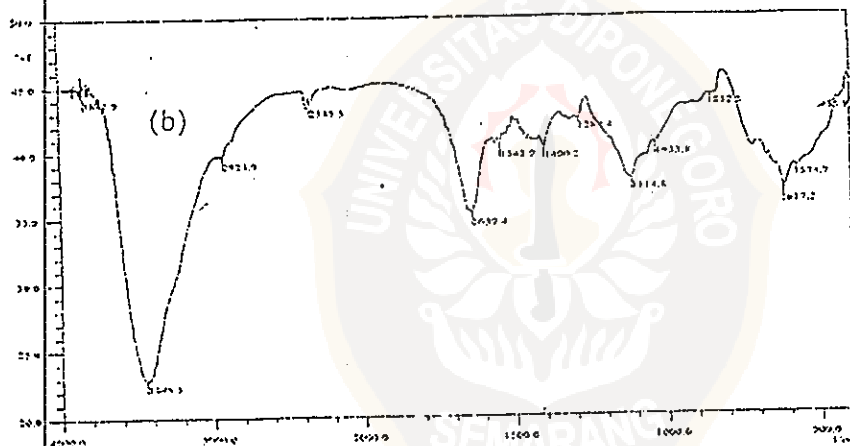
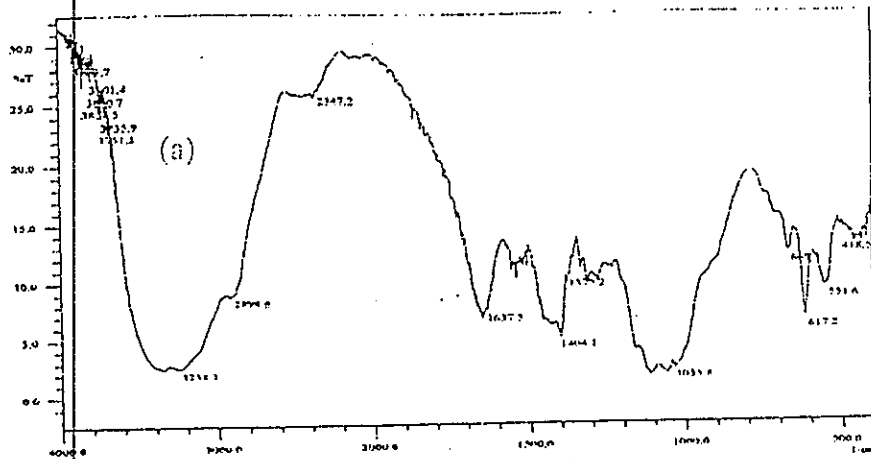
| Nr. | Pos. (1/cm) | Inten. (%T) |
|-----|-------------|-------------|
| 1   | 435.9       | 35.587      |
| 2   | 497.6       | 34.876      |
| 3   | 520.7       | 32.310      |
| 4   | 559.3       | 30.479      |
| 5   | 896.8       | 42.579      |
| 6   | 995.2       | 32.818      |
| 7   | 1282.6      | 34.192      |
| 8   | 1317.3      | 32.623      |
| 9   | 1429.2      | 33.284      |
| 10  | 1541.0      | 37.139      |
| 11  | 1635.5      | 34.196      |
| 12  | 2065.6      | 62.167      |
| 13  | 2536.2      | 55.461      |
| 14  | 2738.7      | 47.403      |
| 15  | 2896.9      | 35.458      |
| 16  | 3232.5      | 34.387      |
| 17  | 3712.7      | 62.453      |
| 18  | 3751.3      | 62.298      |
| 19  | 3853.5      | 61.675      |
| 20  | 3905.6      | 62.607      |

Lampiran E. Spektra IR *nata de soya* dengan zat warna hari ke-10

Lampiran F. Spektra IR *nata de soya* tanpa zat warna hari ke-2, 4, 6

Spektra IR biopolimerisasi (a) hari ke-2,

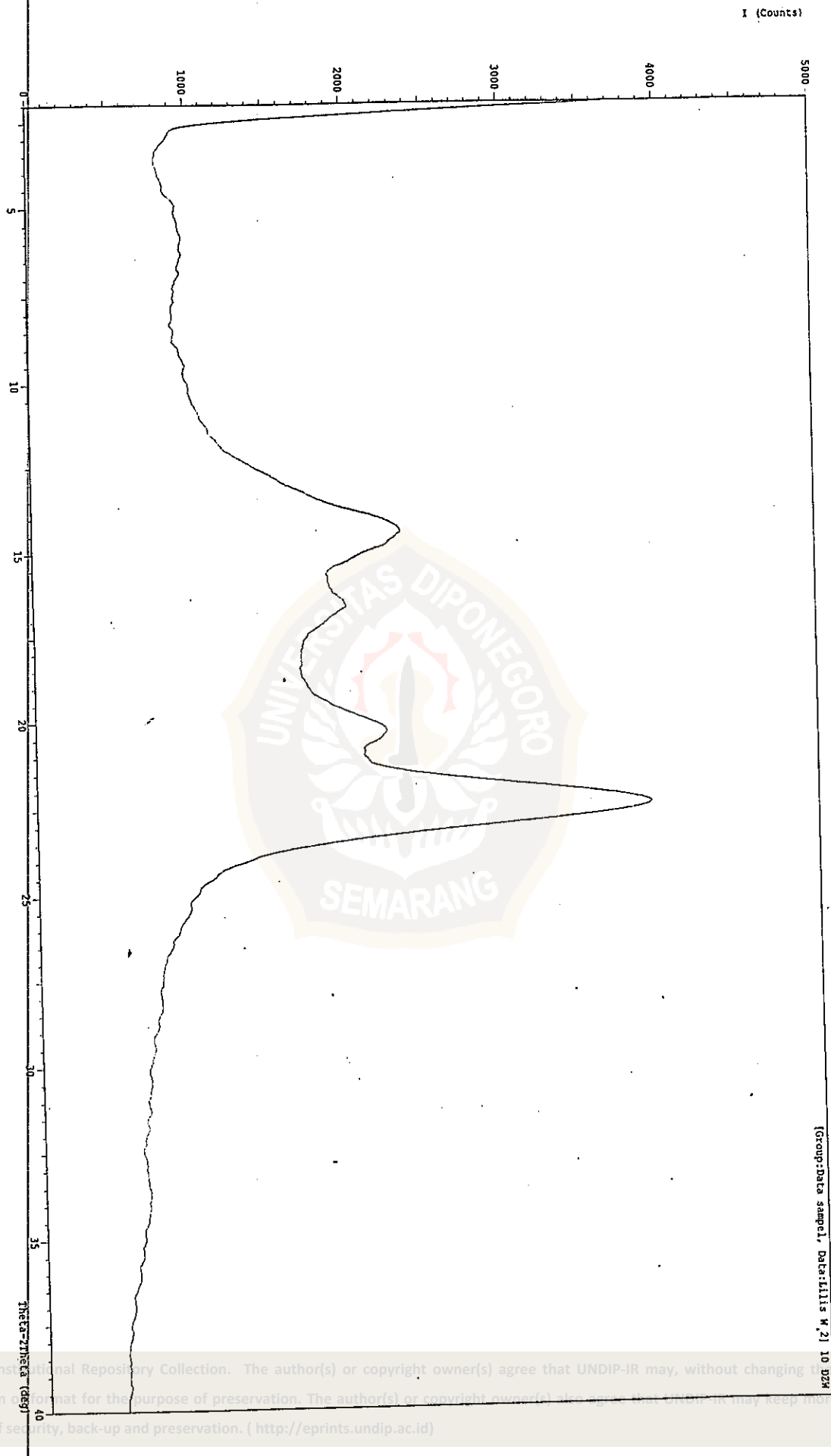
(b) hari ke-4, (c) hari ke-6

Lampiran G. Spektra IR *nata de soya* tanpa zat warna hari ke-8, 10

(a) spektra IR biopolimerisasi hari ke-8

(b) spektra IR biopolimerisasi hari ke-10

Lampiran H. Difraktogram sinar-X *nata de soya* dengan zat warna hari ke-10



[Group: Data sampel, Date: 11/11/21, 10:02 AM]



Lampiran I. Data sinar-X *nata de soya* dengan zat warna hari ke-10

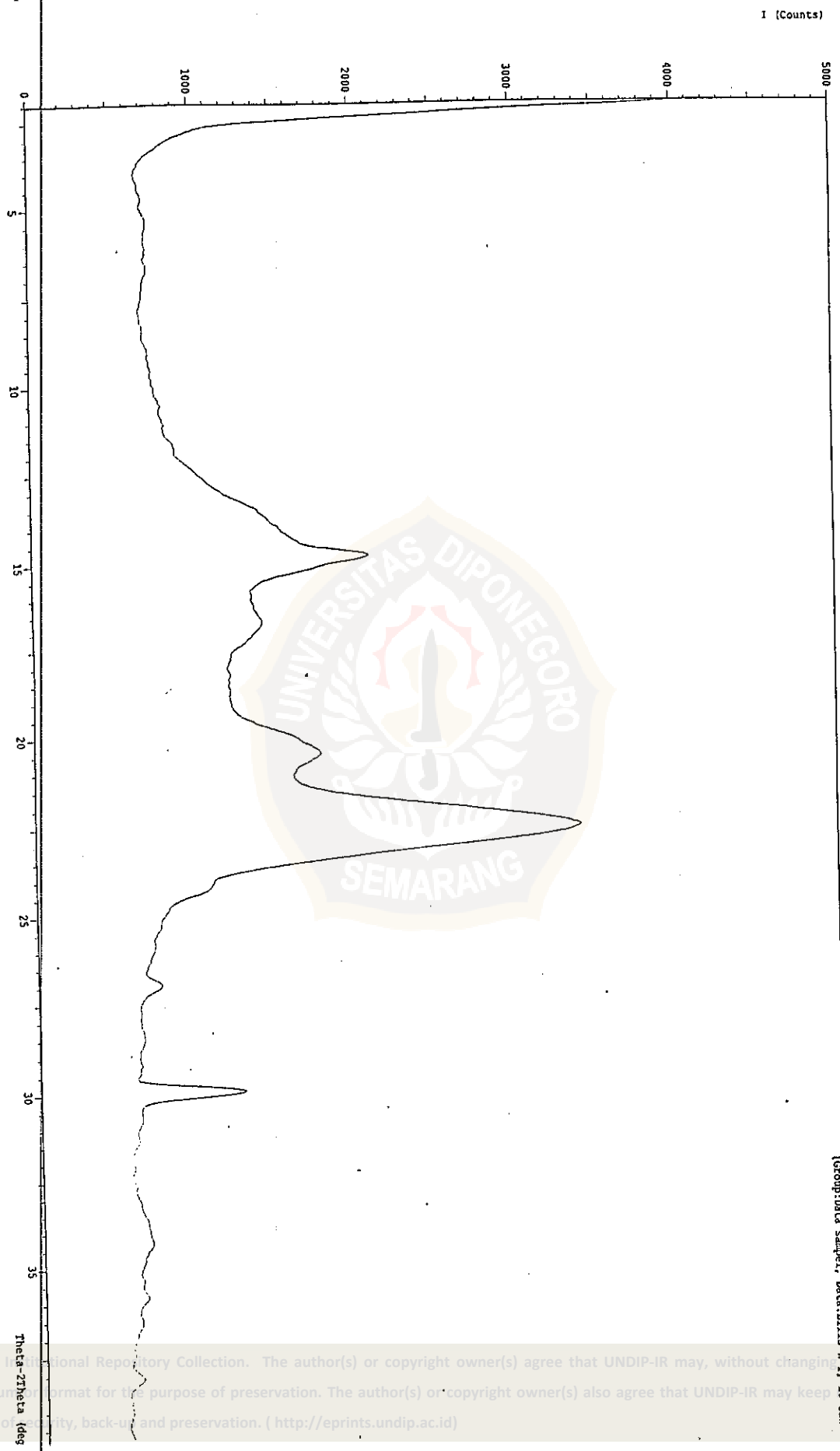
| # Strongest peaks | no. peak no. | 2Theta (deg) | d (Å)   | I/I1 | FWHM (deg) | Intensity (Counts) | Integrated Int (Counts) |
|-------------------|--------------|--------------|---------|------|------------|--------------------|-------------------------|
| 1                 | 7            | 22.3912      | 3.96737 | 100  | 1.73240    | 2061               | 214120                  |
| 2                 | 4            | 14.4200      | 6.13754 | 46   | 2.65760    | 945                | 121657                  |
| 3                 | 6            | 20.3000      | 4.37110 | 44   | 0.00000    | 902                | 0                       |

| # Peak Data List | peak no. | 2Theta (deg) | d (Å) | I/I1    | FWHM (deg) | Intensity (Counts) | Integrated Int (Counts) |
|------------------|----------|--------------|-------|---------|------------|--------------------|-------------------------|
| 1                | 5.8286   | 15.15080     | 4     | 2.32930 | 84         | 9910               |                         |
| 2                | 11.1400  | 7.93618      | 5     | 2.40580 | 112        | 15084              |                         |
| 3                | 12.7600  | 6.93202      | 19    | 1.56000 | 392        | 23946              |                         |
| 4                | 14.4200  | 6.13754      | 46    | 2.65760 | 945        | 121657             |                         |
| 5                | 16.6200  | 5.32973      | 35    | 0.00000 | 715        | 0                  |                         |
| 6                | 20.3000  | 4.37110      | 44    | 0.00000 | 902        | 0                  |                         |
| 7                | 22.3912  | 3.96737      | 100   | 1.73240 | 2061       | 214120             |                         |
| 8                | 25.3200  | 3.51470      | 5     | 1.72580 | 112        | 21665              |                         |



Lampiran J. Difraktogram sinar-X *nata de soya* tanpa zat warna hari ke-10

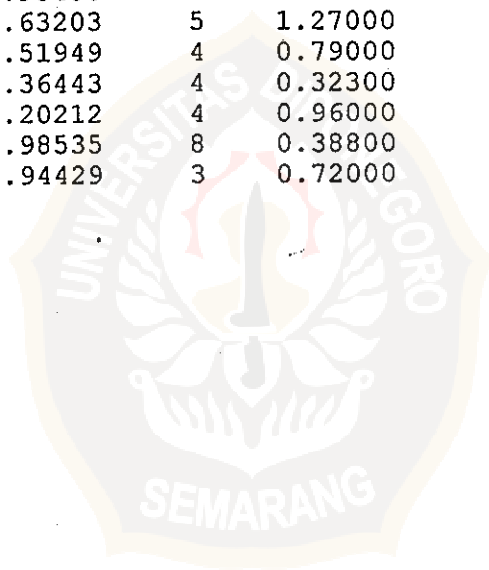


{Group:Data sampel, Data:Jl.11 10 14}

Lampiran K. Data sinar-X *nata de soya* tanpa zat warna hari ke-10

| # Strongest peak no. | 3 peaks peak no. | 2Theta (deg) | d (Å)   | I/I1 | FWHM (deg) | Intensity (Counts) | Integrated Int (Counts) |
|----------------------|------------------|--------------|---------|------|------------|--------------------|-------------------------|
| 1                    | 5                | 22.5016      | 3.94815 | 100  | 1.49760    | 1645               | 122476                  |
| 2                    | 2                | 14.5833      | 6.06917 | 43   | 1.35330    | 713                | 39505                   |
| 3                    | 4                | 20.4400      | 4.34147 | 29   | 1.51340    | 478                | 41556                   |

| # Peak Data List peak no. | 2Theta (deg) | d (Å)   | I/I1 | FWHM (deg) | Intensity (Counts) | Integrated Int (Counts) |
|---------------------------|--------------|---------|------|------------|--------------------|-------------------------|
| 1                         | 13.0600      | 6.77345 | 11   | 1.10860    | 186                | 14781                   |
| 2                         | 14.5833      | 6.06917 | 43   | 1.35330    | 713                | 39505                   |
| 3                         | 16.5600      | 5.34891 | 13   | 1.61000    | 217                | 21673                   |
| 4                         | 20.4400      | 4.34147 | 29   | 1.51340    | 478                | 41556                   |
| 5                         | 22.5016      | 3.94815 | 100  | 1.49760    | 1645               | 122476                  |
| 6                         | 24.2600      | 3.66582 | 9    | 0.34800    | 152                | 4682                    |
| 7                         | 26.9436      | 3.30648 | 4    | 0.36150    | 72                 | 1399                    |
| 8                         | 29.9147      | 2.98450 | 28   | 0.34130    | 457                | 8693                    |
| 9                         | 34.0350      | 2.63203 | 5    | 1.27000    | 79                 | 5426                    |
| 10                        | 35.6050      | 2.51949 | 4    | 0.79000    | 64                 | 3647                    |
| 11                        | 38.0265      | 2.36443 | 4    | 0.32300    | 58                 | 1124                    |
| 12                        | 40.9500      | 2.20212 | 4    | 0.96000    | 70                 | 5870                    |
| 13                        | 45.6593      | 1.98535 | 8    | 0.38800    | 139                | 3465                    |
| 14                        | 46.6800      | 1.94429 | 3    | 0.72000    | 52                 | 3826                    |



## Lampiran L. Perhitungan Kristalinitas

$$\% \text{ perubahan kristalinitas} = \frac{\sum (\text{intensitas} \times FWHM)_{\text{sampel}}}{\sum (\text{intensitas} \times FWHM)_{\text{standar}}} \times 100\%$$

$$\% \text{ perubahan kristalinitas} = \frac{6081,9084}{4151,8601} \times 100\%$$

$$\% \text{ perubahan kristalinitas} = 146,49 \%$$



## Lampiran M. Perhitungan Kekuatan Regang

$$\sigma = \frac{M \times g}{L}$$

Keterangan:

$\sigma$  = kekuatan regang

$M$  = massa

$L$  = luas sampel

$g$  =  $9,807 \text{ ms}^{-2}$

Data hasil analisis kekuatan regang di PT PURA Kudus

| Sampel                   | Massa   | Luas              |
|--------------------------|---------|-------------------|
| 10 hari dengan zat warna | 0,35 Kg | 5 cm <sup>2</sup> |
| 10 hari tanpa zat warna  | 3,29 Kg | 6 cm <sup>2</sup> |