

## LAMPIRAN



## Lampiran 1 Data Uji Kekerasan Vickers

|         | substrate | d1 (mikron) | d2 (mikron) | D2 (mikron <sup>2</sup> ) | F (gr) | t (s) | HV          | HV rata2    | HV min      | HV maks     |
|---------|-----------|-------------|-------------|---------------------------|--------|-------|-------------|-------------|-------------|-------------|
|         |           | 19.9        | 20.1        | 400                       | 10     | 5     | 46.35       | 46.05750408 | 1.288142358 | 0.995646438 |
| Fe-50Al |           | 19.8        | 20.9        | 414.1225                  | 10     | 5     | 44.76936172 |             |             |             |
|         |           | 19.4        | 20.3        | 394.0225                  | 10     | 5     | 47.05315052 |             |             |             |
|         |           |             |             |                           |        |       |             |             |             |             |
|         | antarmuka | 23.5        | 22.45       | 527.850625                | 10     | 5     | 35.12357308 | 48.03782061 | 12.91424753 | 7.933680421 |
|         |           | 17.3        | 19.1        | 331.24                    | 10     | 5     | 55.97150103 |             |             |             |
|         |           | 19.75       | 17.65       | 349.69                    | 10     | 5     | 53.01838771 |             |             |             |
|         | lapisan   | 18.3        | 18.3        | 334.89                    | 10     | 5     | 55.36146197 | 60.57790415 | 5.216442176 | 9.202667194 |
|         |           | 19.8        | 16.4        | 327.61                    | 10     | 5     | 56.59167913 |             |             |             |
|         |           | 16.8        | 15.8        | 265.69                    | 10     | 5     | 69.78057134 |             |             |             |

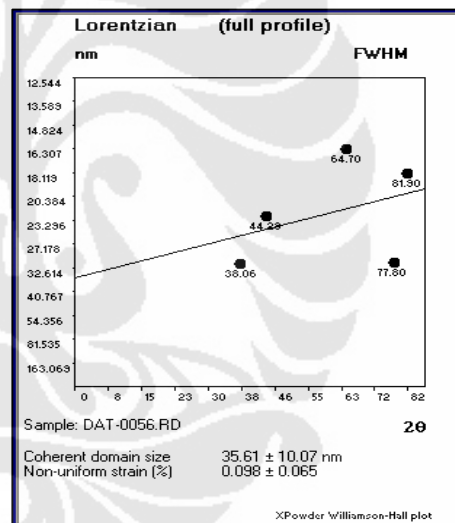
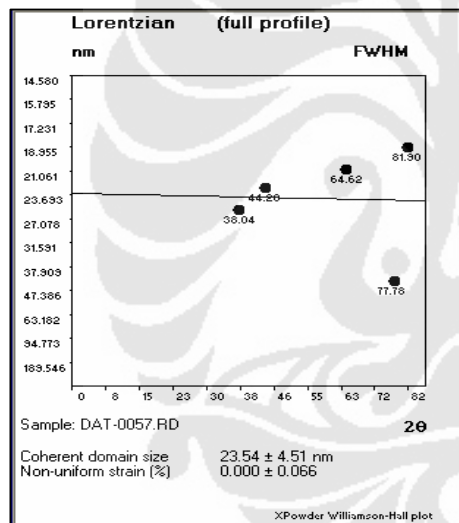
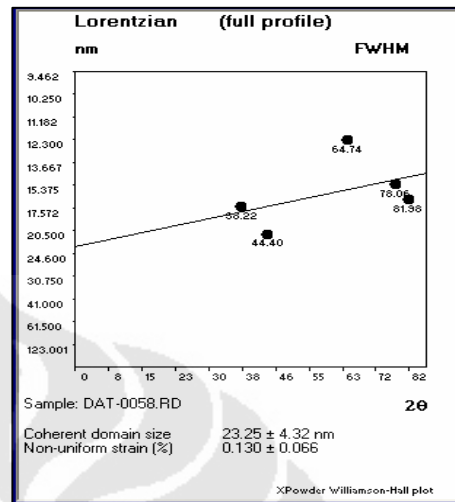
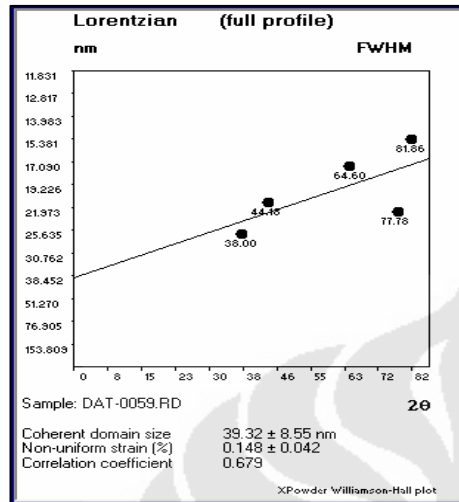
|             | substrate | d1 (mikron) | d2 (mikron) | D2 (mikron <sup>2</sup> ) | F (gr) | t (s) | HV          | HV rata2    | HV min      | HV maks     |
|-------------|-----------|-------------|-------------|---------------------------|--------|-------|-------------|-------------|-------------|-------------|
|             |           | 19.9        | 20.1        | 400                       | 10     | 5     | 46.35       | 46.05750408 | 1.288142358 | 0.995646438 |
| Fe-50Al-1Cr |           | 19.8        | 20.9        | 414.1225                  | 10     | 5     | 44.76936172 |             |             |             |
|             |           | 19.4        | 20.3        | 394.0225                  | 10     | 5     | 47.05315052 |             |             |             |
|             |           |             |             |                           |        |       |             |             |             |             |
|             | antarmuka | 18.4        | 20.9        | 386.1225                  | 10     | 5     | 48.01584989 | 45.40067905 | 4.149344054 | 2.615170843 |
|             |           | 22.6        | 19.8        | 449.44                    | 10     | 5     | 41.25133499 |             |             |             |
|             |           | 19.25       | 20.5        | 395.015625                | 10     | 5     | 46.93485226 |             |             |             |
|             | lapisan   | 19          | 19.9        | 378.3025                  | 10     | 5     | 49.00839936 | 52.84692967 | 3.83853031  | 2.514532299 |
|             |           | 19.1        | 17.9        | 342.25                    | 10     | 5     | 54.17092768 |             |             |             |
|             |           | 18.2        | 18.4        | 334.89                    | 10     | 5     | 55.36146197 |             |             |             |

|             | substrate | d1 (mikron) | d2 (mikron) | D2 (mikron <sup>2</sup> ) | F (gr) | t (s) | HV          | HV rata2    | HV min       | HV maks     |
|-------------|-----------|-------------|-------------|---------------------------|--------|-------|-------------|-------------|--------------|-------------|
|             |           | 19.9        | 20.1        | 400                       | 10     | 5     | 46.35       | 46.05750408 | 1.288142358  | 0.995646438 |
| Fe-50Al-3Cr |           | 19.8        | 20.9        | 414.1225                  | 10     | 5     | 44.76936172 |             |              |             |
|             |           | 19.4        | 20.3        | 394.0225                  | 10     | 5     | 47.05315052 |             |              |             |
|             |           |             |             |                           |        |       |             |             |              |             |
|             | antarmuka | 20.5        | 23.2        | 477.4225                  | 10     | 5     | 38.83352795 | 40.5582345  | 1.724706549  | 1.987572086 |
|             |           | 20.1        | 21.65       | 435.765625                | 10     | 5     | 42.54580659 |             |              |             |
|             |           | 22.1        | 20.8        | 460.1025                  | 10     | 5     | 40.29536897 |             |              |             |
|             | lapisan   | 15.35       | 16.9        | 260.015625                | 10     | 5     | 71.30340725 | 64.97757927 | -6.325827976 | 6.325827976 |
|             |           | 15.2        | 18.9        | 290.7025                  | 10     | 5     | 63.77654131 |             |              |             |
|             |           | 18.4        | 16.8        | 309.76                    | 10     | 5     | 59.85278926 |             |              |             |

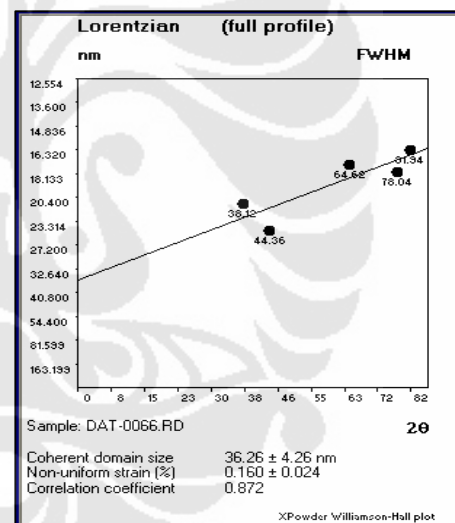
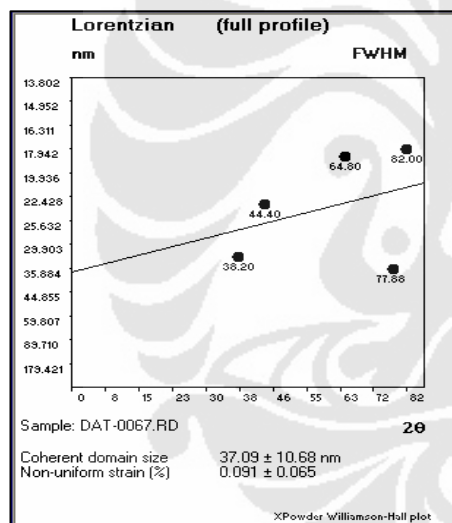
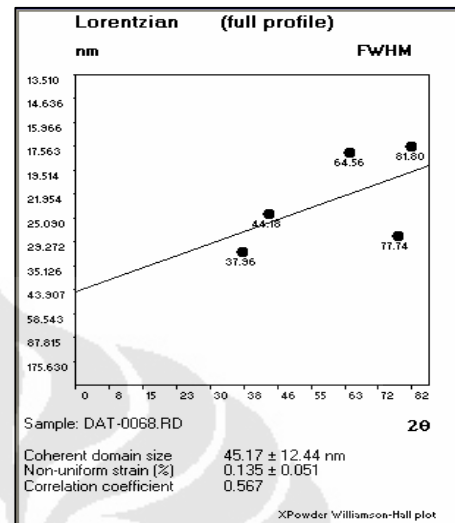
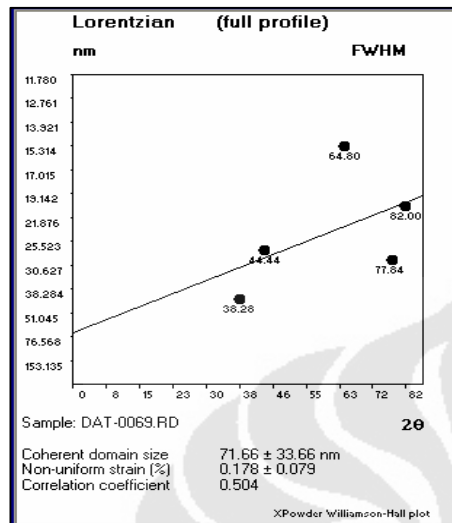
## Lampiran 2 Data Pengukuran Kristal

| sampel      | waktu | ukuran kristal | rata2  | min    | mak    |
|-------------|-------|----------------|--------|--------|--------|
| Fe-50Al     | 4     | 71.66          | 47.545 | 11.285 | 24.115 |
|             | 8     | 45.17          |        |        |        |
|             | 16    | 37.09          |        |        |        |
|             | 32    | 36.26          |        |        |        |
|             |       |                |        |        |        |
| sampel      | waktu | ukuran kristal | rata2  | min    | mak    |
| Fe-50Al-1Cr | 4     | 35.93          | 39.345 | 16.095 | 19.535 |
|             | 8     | 58.88          |        |        |        |
|             | 16    | 39.32          |        |        |        |
|             | 32    | 23.25          |        |        |        |
|             |       |                |        |        |        |
| sampel      | waktu | ukuran kristal | rata2  | min    | mak    |
| Fe-50Al-3Cr | 4     | 23.54          | 32.835 | 9.295  | 9.055  |
|             | 8     | 35.61          |        |        |        |
|             | 16    | 41.89          |        |        |        |
|             | 32    | 30.3           |        |        |        |
|             |       |                |        |        |        |

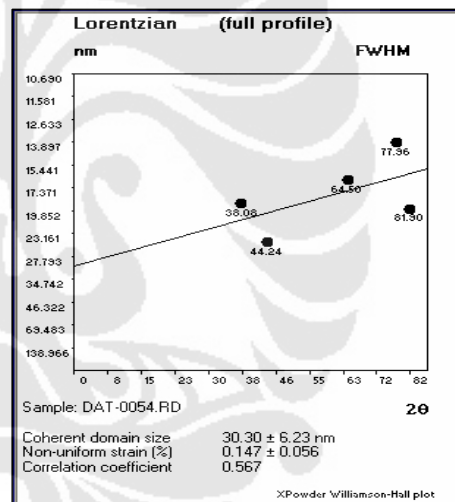
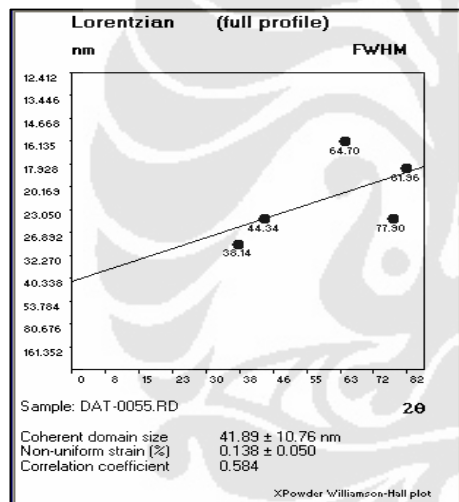
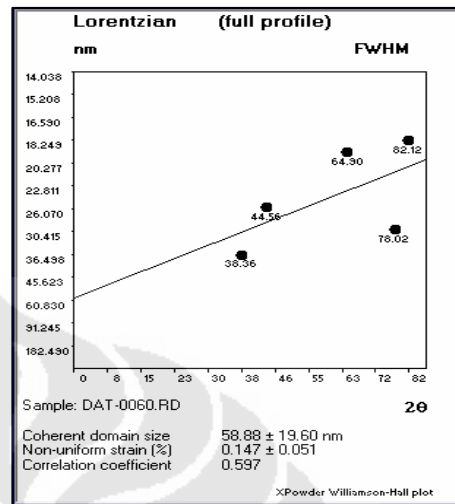
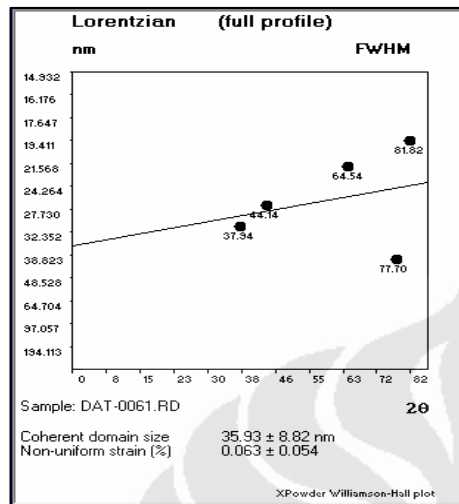
## Lampiran 2.1 Williamson-Hall plot Fe-50at.%Al



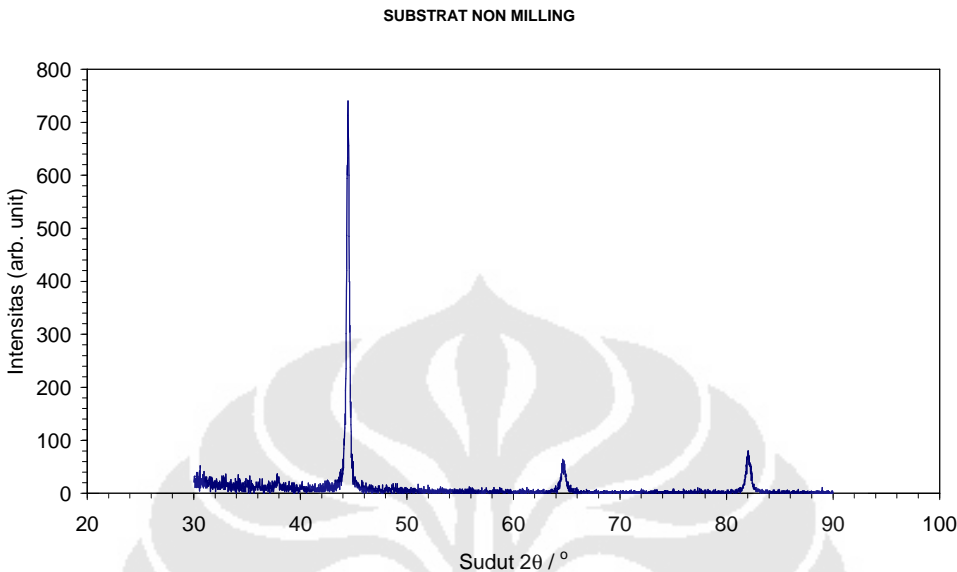
## Lampiran 2.2 Williamson-Hall plot Fe-50at.%Al -1at.%Al



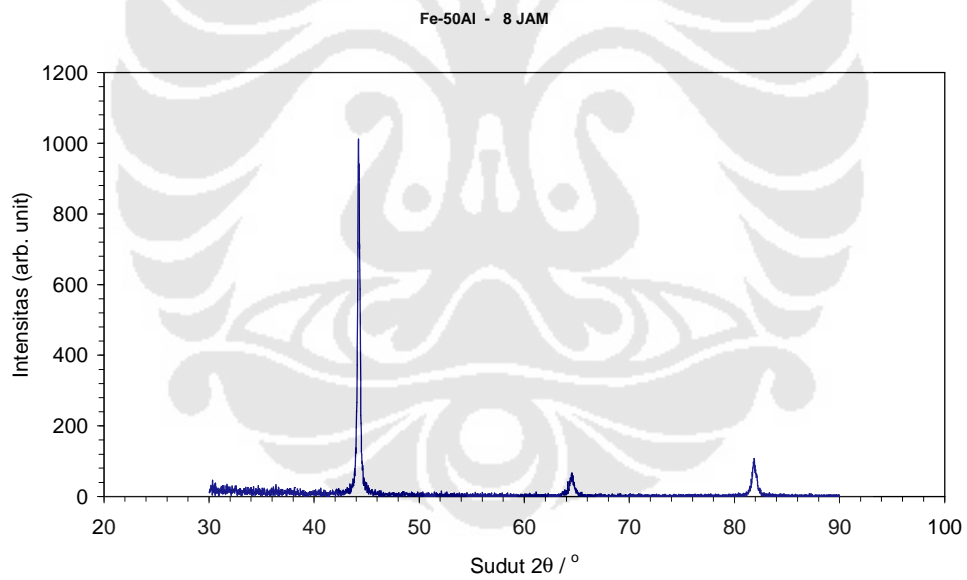
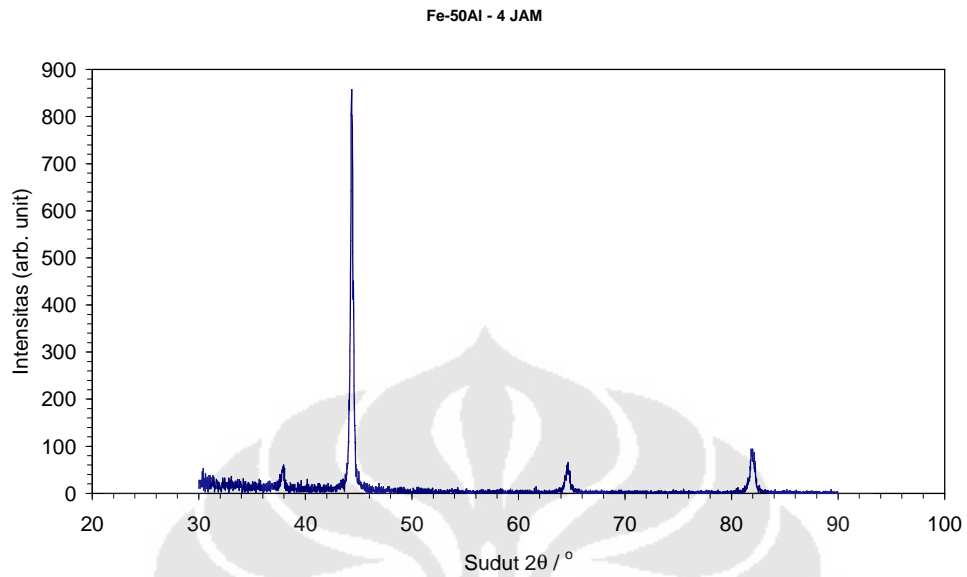
## Lampiran 2.3 Williamson-Hall plot Fe-50at.%Al -3at.%Al



Lampiran 3 Hasil Uji XRD *Substrate* sebelum penggilingan

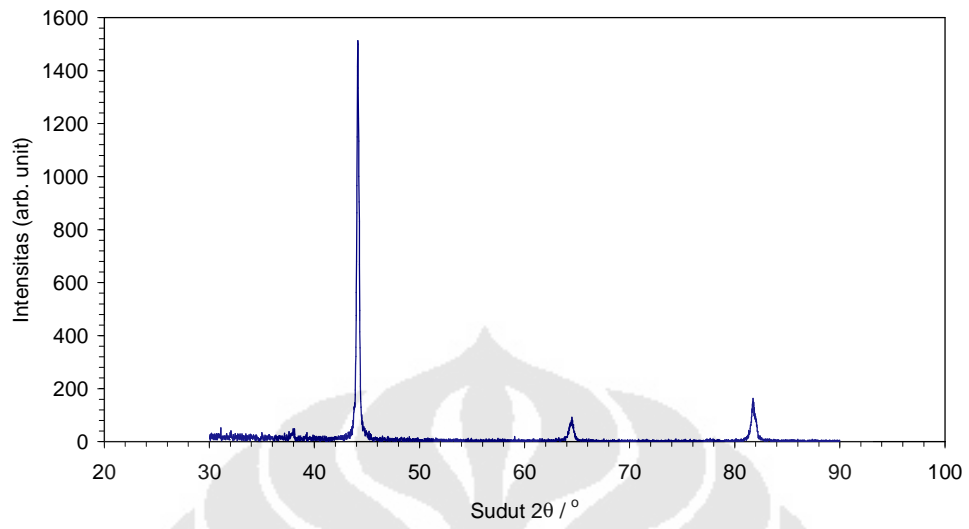


#### Lampiran 4 Hasil Uji XRD *Substrate* Fe-50at.%Al

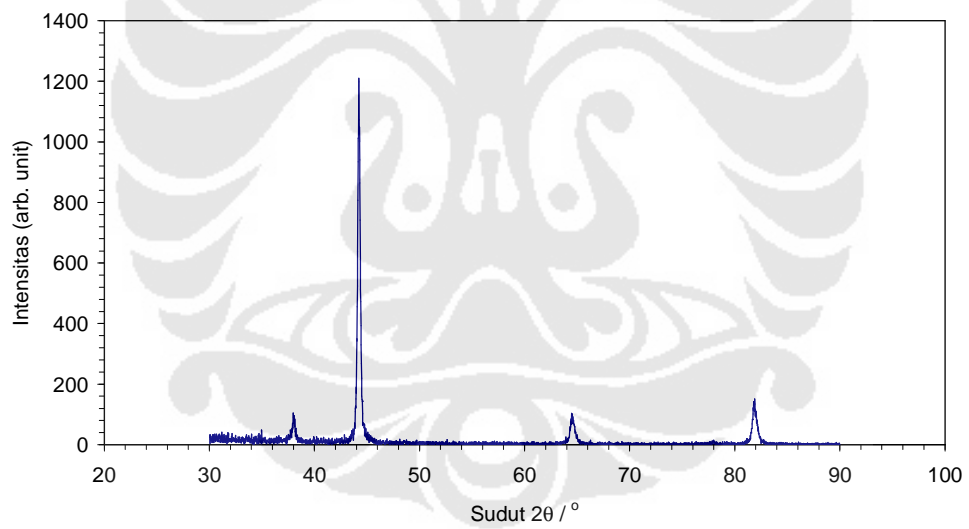




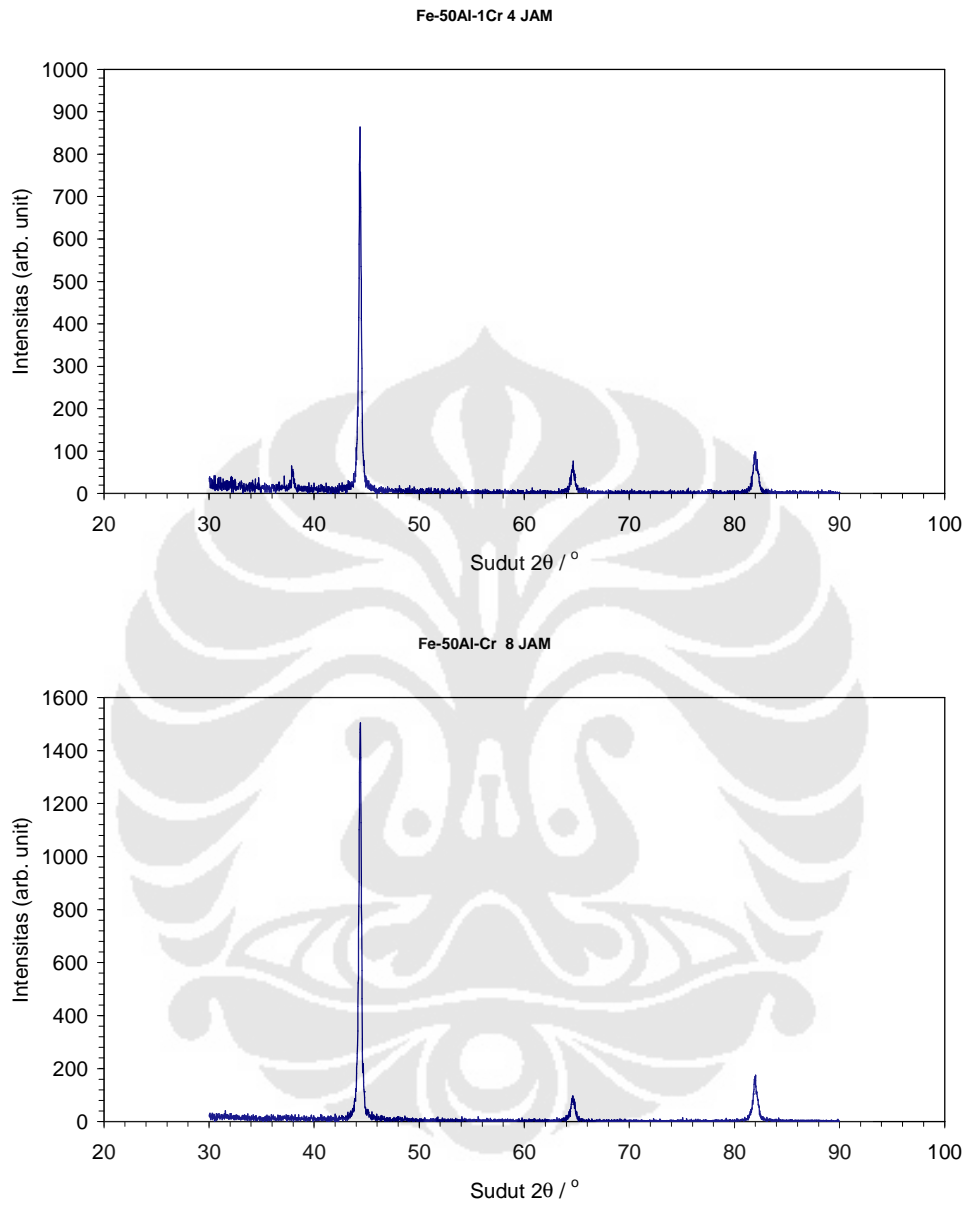
Fe-50Al - 16 JAM



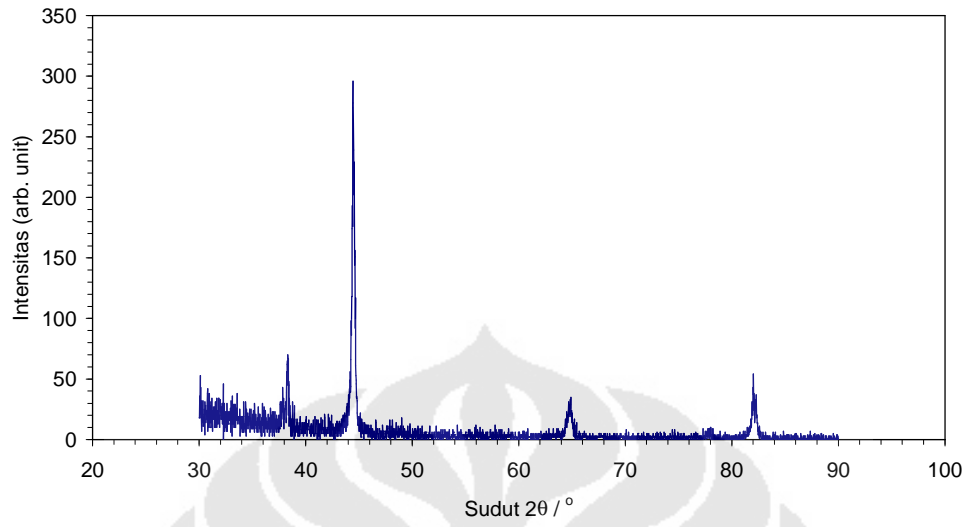
Al 50% Fe 50% 36 J



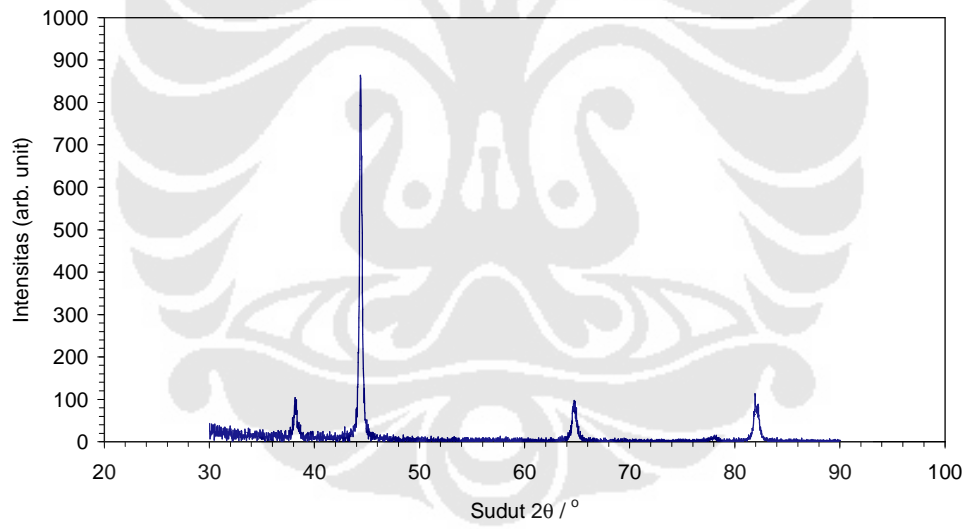
**Lampiran 5 Hasil Uji XRD Substrate Fe-50at.%Al-1at.%Cr**



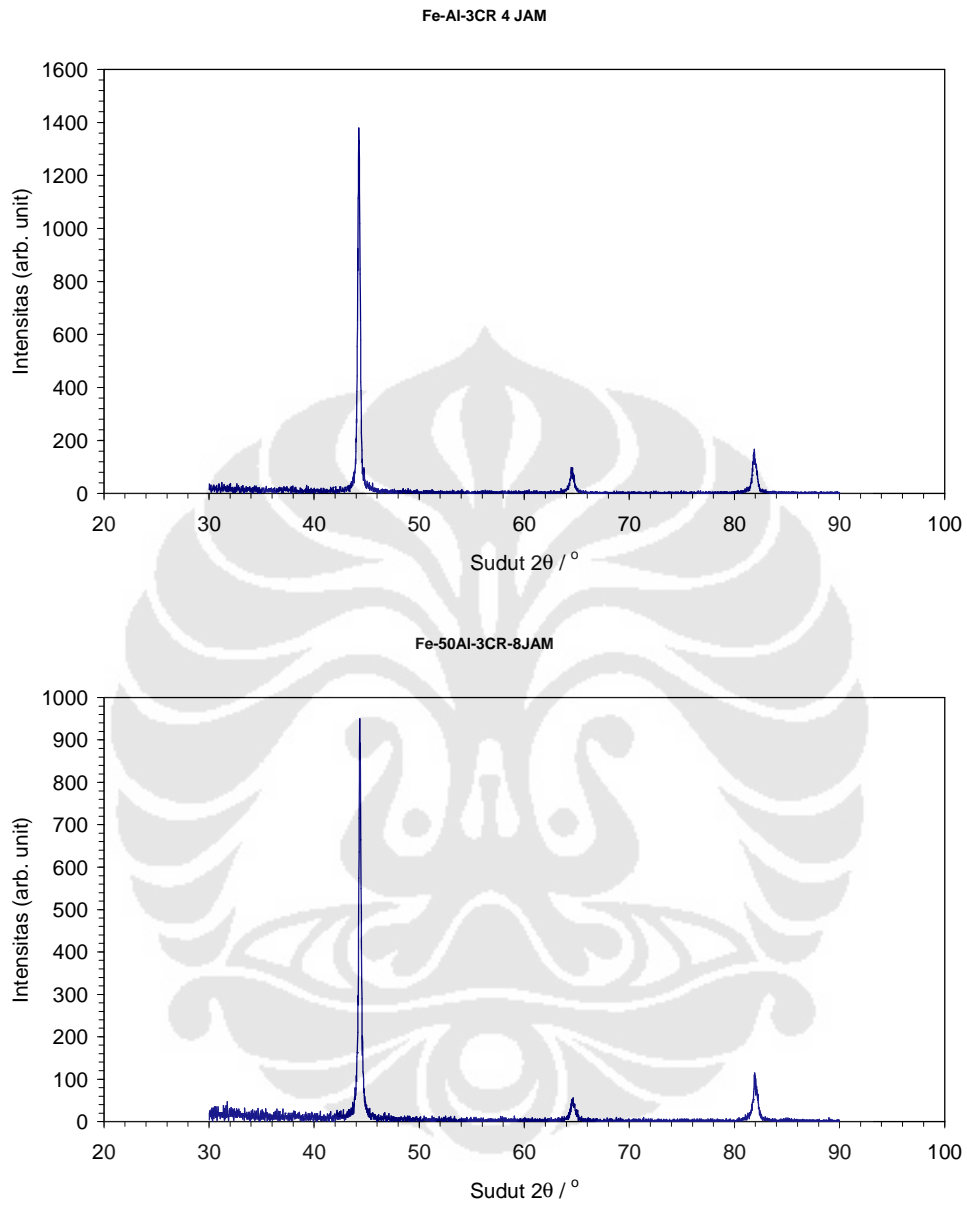
Fe-50Al-1Cr 16 JAM



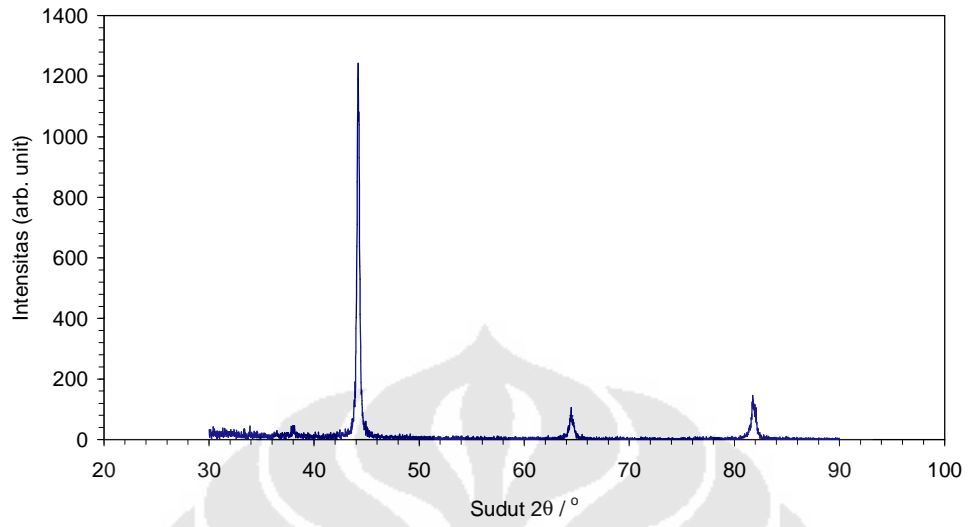
Fe-50Al-1Cr 32 JAM



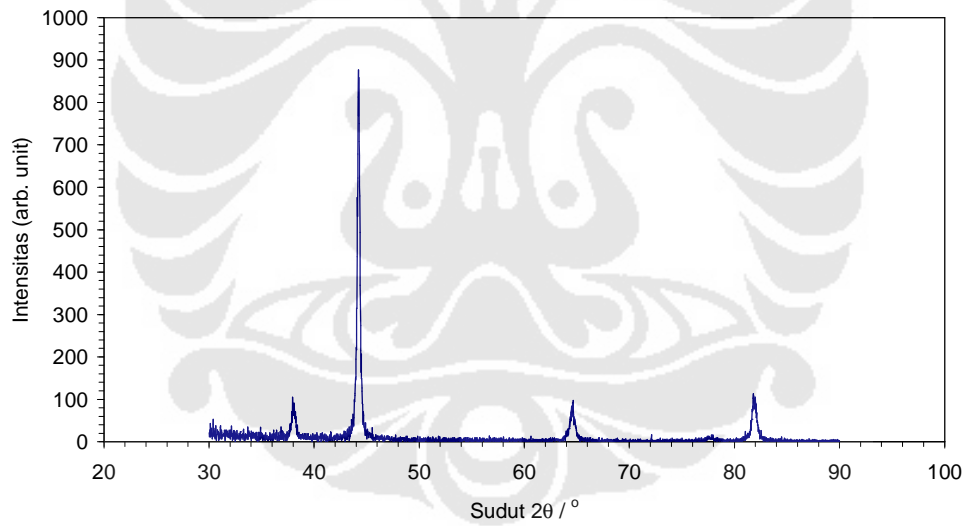
**Lampiran 6 Hasil Uji XRD Substrate Fe-50at.%Al-3at.%Cr**



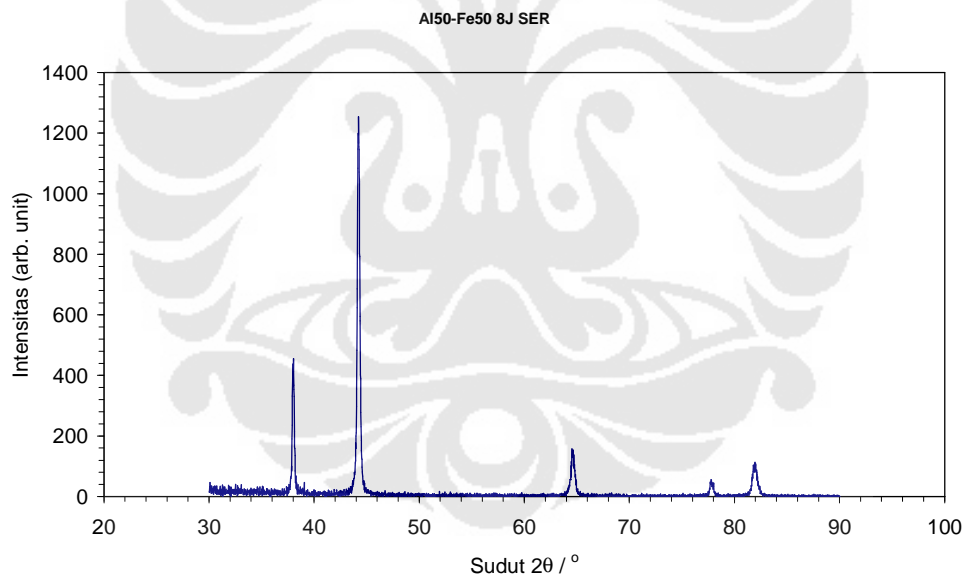
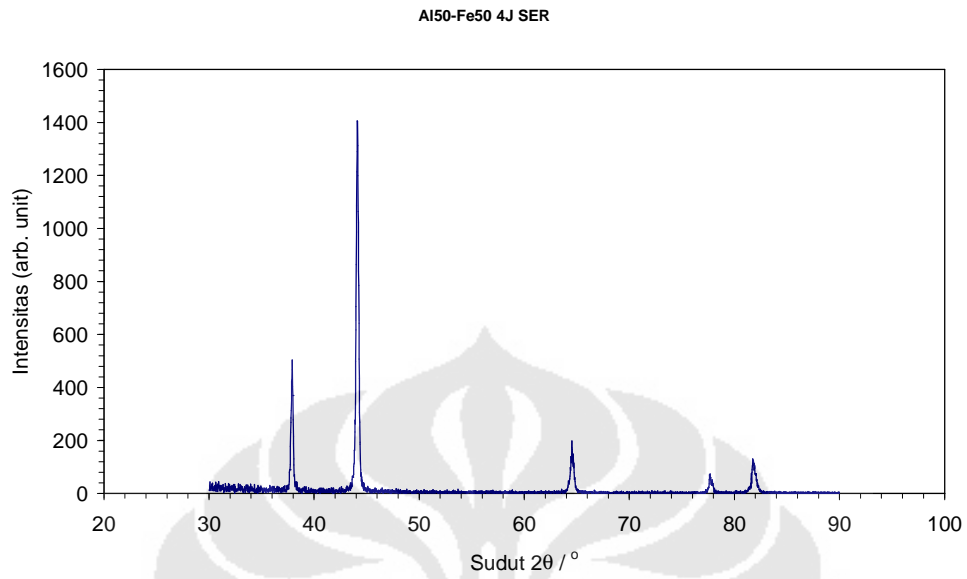
Fe-50Al-3Cr 16 JAM



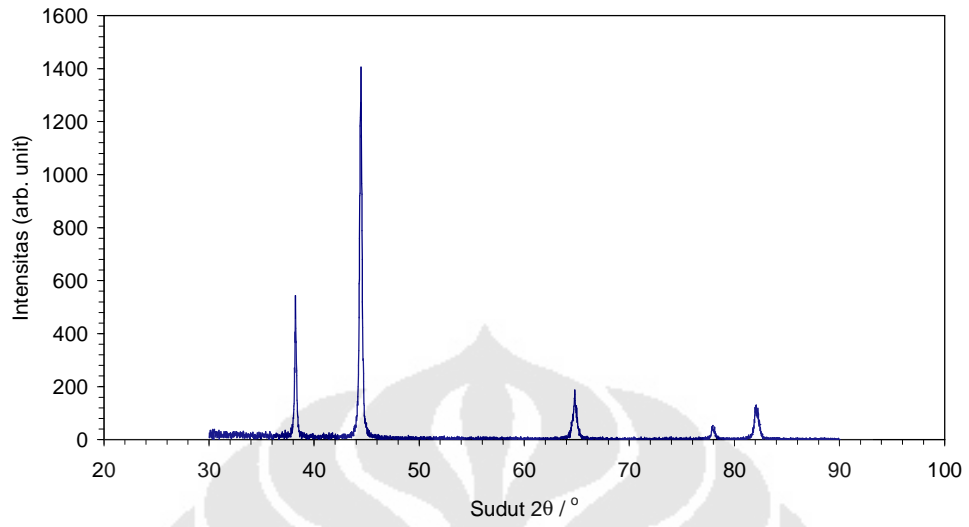
Fe-50Al-3Cr 32 JAM



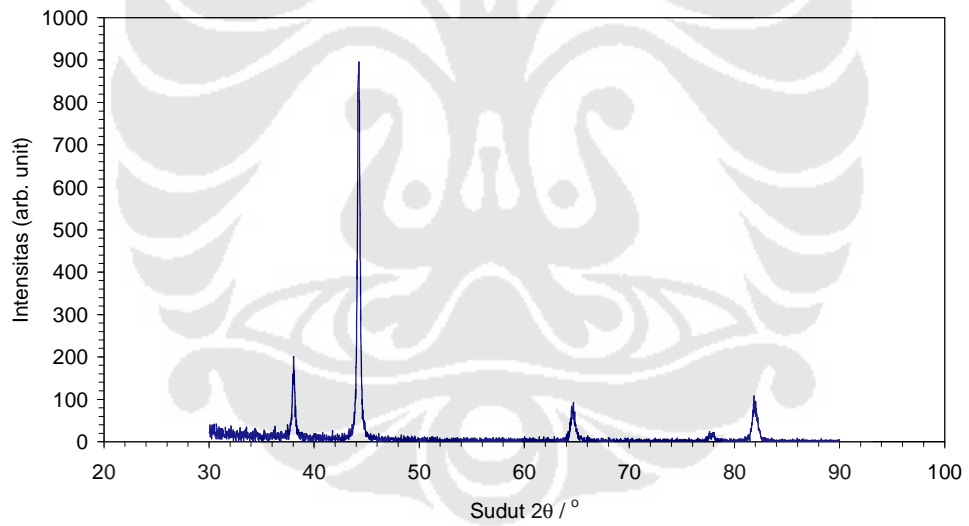
Lampiran 7 Hasil Uji XRD Serbuk Fe-50at.%Al



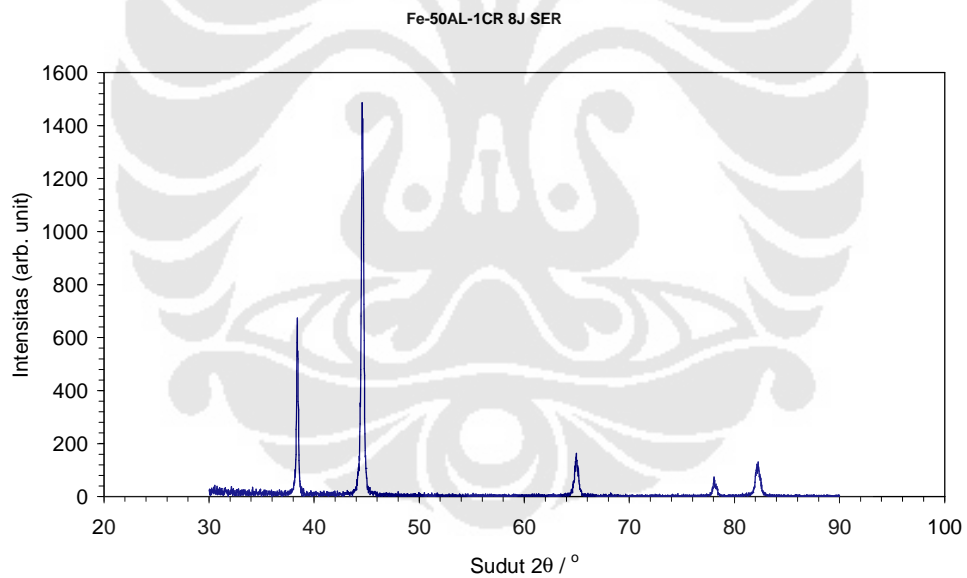
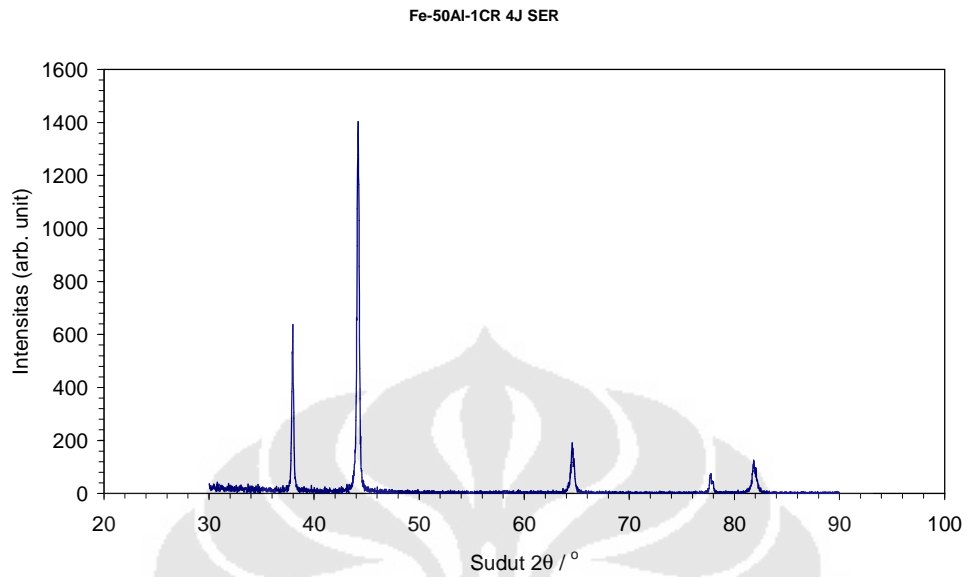
Al50-Fe50 16J SER



Al50-Fe50 32J SER

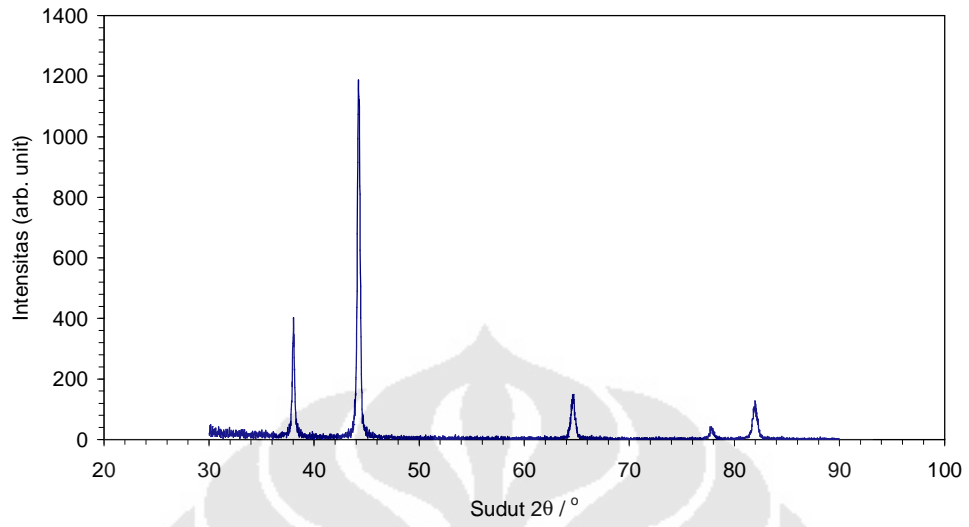


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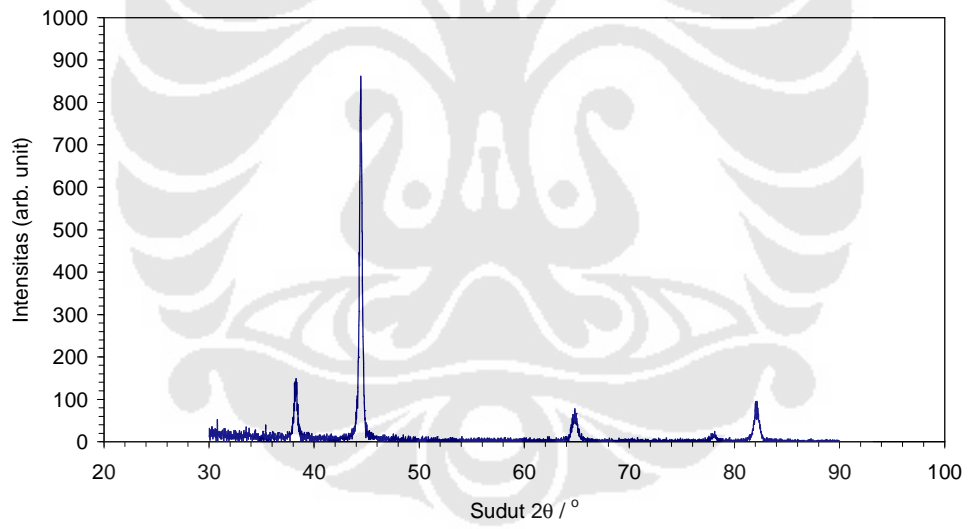




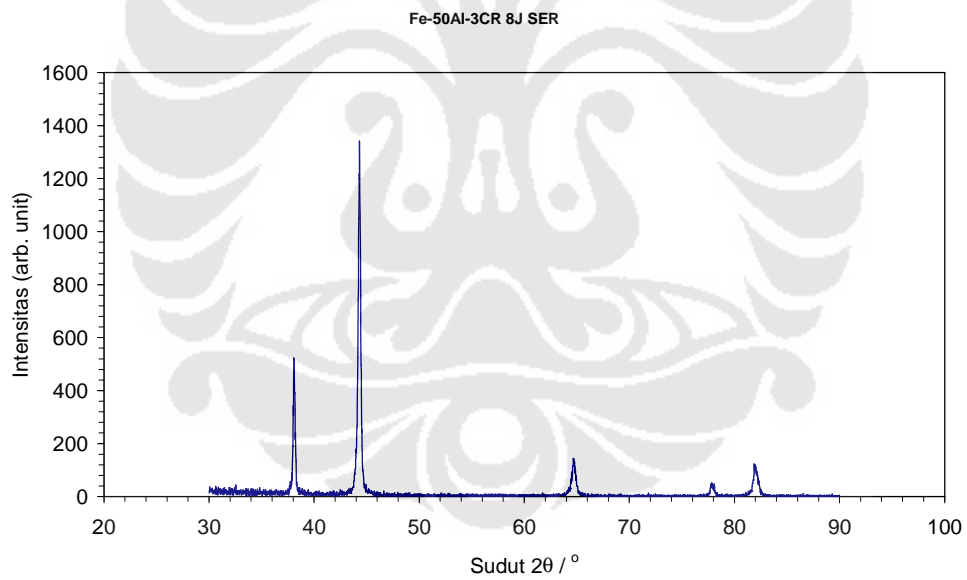
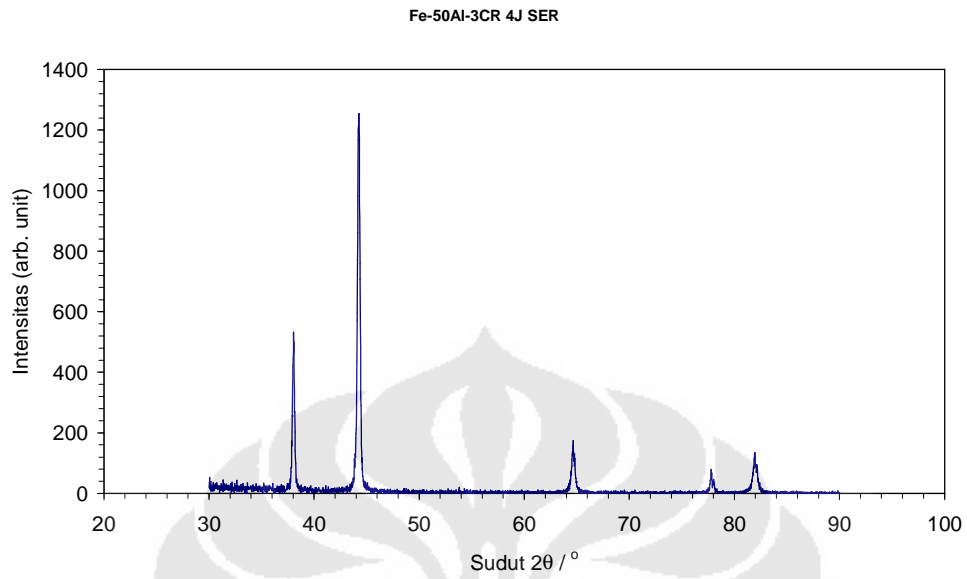
Fe-50AL-1CR 16J SER



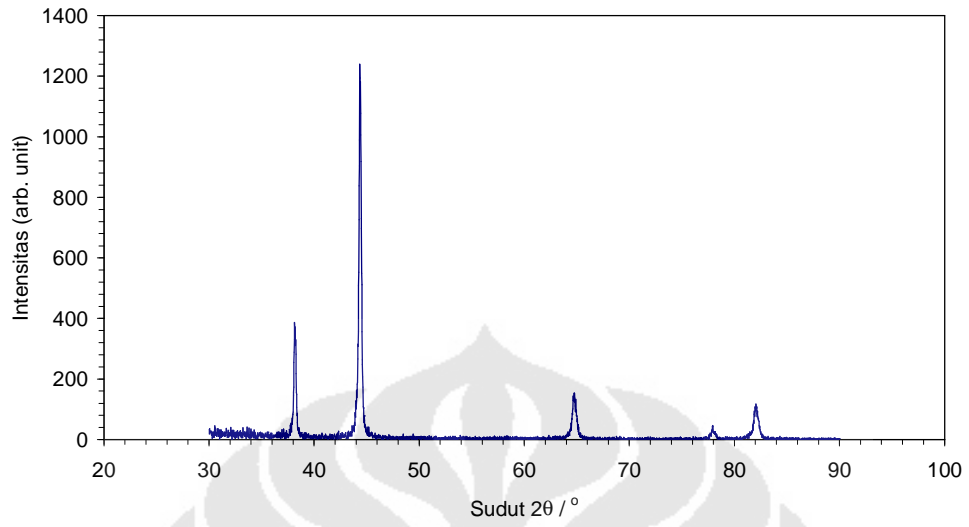
Fe-50AL-1CR 32J SER



**Lampiran 9 Hasil Uji XRD Serbuk Fe-50at.%Al-3at.%Cr**



Fe-50Al-3CR 16J SER



Fe-50Al-3CR 32J SER

