GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

Original No. REVISION NO.______

Project No. E-18-801 (T5127-0A0)

Project Director: S.R. Stock
Sponsor: McDonnell Douglas Electronics Company

Type Agreement: P.O. No. W2F516X
Award Period: From 2/27/86 To 12/31/86
(Sponsor Amount:
Estimated: $ 6,000
Funded: $ 6,000
Cost Sharing Amount: $ N/A

Title: Rocking Curve Analysis

ADMINISTRATIVE DATA

1) Sponsor Technical Contact: John Schonk X-4820
2) Sponsor Admin/Contractual Matters: Brenda Hawkins
McDonnell Douglas Electronics Company
Box 426
St. Charles, Missouri 63302
314/925-4688

Defense Priority Rating: N/A
Military Security Classification: N/A

RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval - Contact OCA in each case. Domestic travel requires sponsor
approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with N/A

COMMENTS:

COPIES TO:

Project Director
Research Administrative Network
Research Property Management
Accounting

SPONSOR'S I. D. NO. 02.212.000.86T361

Procurement/GTRI Supply Services
Research Security Services
Reports Coordinator (OCA)
Research Communications (2)
GTRC
Library
Project File
Other A. Jones
GEORGIA INSTITUTE OF TECHNOLOGY

OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 12/10/86

Project No. E18-801

Includes Subproject No.(s) N/A

Project Director(s) S. R. Stock

Sponsor McDonnell Douglas Electronics Company

Title Rocking Curve Analysis

Effective Completion Date: 12/31/86

Grant/Contract Closeout Actions Remaining:

- [X] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other

* Terminate per John Schonk

Fixed price. Accounting to check with P.I. for No. of samples.

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Research Administrative Network
Research Property Management
Accounting
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Reports Coordinator (QCA)
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GTRC
Research Communications (2)
Project File
Other I. Lashley
A. Jones
R. Embry

Continues Project No. Continued by Project No. 
DOUBLE CRYSTAL ROCKING CURVE: Report 1

For: McDonnell Douglas Electronics Company

Specimen Identity: CdTe (111) II-VI # 8219 (CT2S-727)

Radiation: Copper K-alpha (25 kv, 7 ma)

Experimental Arrangement: (+,-)

Scan parameters: T. C. = 0.5, Scan Rate 8

Monochromator, Reflection: InSb (333)

Specimen, Reflection: CdTe (-3,-3,-3)

Experimental FWHM: 36 arc sec.

Comments: Presuming that this crystal is indeed high quality as-grown material, it is surprising that the rocking curve width is so great. The most probable cause is the glue used to mount the crystal onto a glass holder: large strains are the usual result of mounting material in this fashion. See Ch. 13 of Characterization of Crystal Growth Defects, Tanner and Bowen, eds., for a brief discussion of mounting methods. A second contribution could be from polishing damage if the crystal has not been chemically polished. The attached sheet is a photocopy of the experimentally measured rocking curves.
DOUBLE CRYSTAL ROCKING CURVE: Report 2

For: McDonnell Douglas Electronics Company
Specimen I.D.: CdTe (111) Eagle Picher #1031

Radiation: Copper K-alpha (24 kv, 5 ma)
Experimental Arrangement: (+,-)
Scan parameters: T. C. = 0.5, Scan Rate 8
Monochromator, Reflection: GaAs (004)
Specimen, Reflection: CdTe (-3,-3,-3)

Experimental FWHM: 32 arc sec.

Comments: This crystal has been glued onto the glass holder, and the resulting rocking curve width would be expected to be large. (see comments on Report 1) Note the difference in monochromator. Some dispersion broadening would be expected, but this is much smaller than the observed value. The attached sheet is a photocopy of the experimental curves.

P. C. Huang and S. R. Stock
April 18, 1986
DOUBLE CRYSTAL ROCKING CURVE: Report 3

For: McDonnell Douglas Electronics Company

Specimen I.D.: CdZnTe (111) II-VI # 23765 (CT2S-880)

Radiation: Copper K-alpha (20 kv, 5 ma)

Experimental Arrangement: (+,-)

Scan parameters: T. C. = 0.5, Scan Rate 8

Monochromator, Reflection: InSb (333)

Specimen, Reflection: CdZnTe (-3,-3,-3)

Experimental FWHM: 14 arc sec.

Comments: This crystal has been glued onto the glass holder, but it appears that the resulting rocking curve width was not affected. The alternative is that the CdZnTe is considerably "better" than the CdTe. The attached sheet is a photocopy of the experimental curves.

P. C. Huang and S. R. Stock
April 18, 1986
DOUBLE CRYSTAL ROCKING CURVE: Report 4

For: McDonnell Douglas Electronics Company
Specimen I.D.: InSb (111) Crystal 1

Radiation: Copper K-alpha (20 kv, 5 ma)
Experimental Arrangement: (+,-)
Scan parameters: T. C. = 0.5, Scan Rate 8
Monochromator, Reflection: InSb (333) Crystal 2
Specimen, Reflection: InSb (-3,-3,-3)

Experimental FWHM: 25 arc sec.

Comments: These crystals were received in an unmounted condition. They were carefully mounted with the only constraint being a small dab of soft wax in one corner. We would be surprised if any specimen deflection resulted. The difference with the expected values may be due to residual surface damage. The attached sheet is a photocopy of the experimental curves. I apologize for the copy quality: our pen was not working extremely well. The lines are distinct, however, on the originals.

P. C. Huang and S. R. Stock
April 18, 1986
DOUBLE CRYSTAL ROCKING CURVE: Report 5

For: McDonnell Douglas Electronics Company
Specimen I.D.: InSb (111) Crystal 2

Radiation: Copper K-alpha (20 kv, 2 ma)
Experimental Arrangement: (+,-)
Scan parameters: T. C. = 0.5, Scan Rate 8
Monochromator, Reflection: InSb (333) Crystal 1
Specimen, Reflection: InSb (-3,-3,-3)

Experimental FWHM: 15 arc sec.

Comments: These crystals were received in an unmounted condition. They were carefully mounted with the only constraint being a small dab of soft wax in one corner. We would be surprised if significant specimen distortion resulted. One should note that this crystal has a significantly narrower FWHM than (111) InSb Crystal 1. The attached sheet is a photocopy of the experimental curves.

P. C. Huang and S. R. Stock
December 1, 1986
(test completed 9/3/86)
DOUBBLE CRYSTAL ROCKING CURVE: Report 5

For: McDonnell Douglas Electronics Company

Specimen I.D.: InSb (111) Crystal 2

Radiation: Copper K-alpha (20 kv, 2 ma)

Experimental Arrangement: (+,-)

Scan parameters: T. C. = 0.5, Scan Rate 8

Monochromator, Reflection: InSb (333) Crystal 1

Specimen, Reflection: InSb (-3,-3,-3)

Experimental FWHM: 15 arc sec.

Comments: These crystals were received in an unmounted condition. They were carefully mounted with the only constraint being a small dab of soft wax in one corner. We would be surprised if significant specimen distortion resulted. One should note that this crystal has a significantly narrower FWHM than (111) InSb Crystal 1. The attached sheet is a photocopy of the experimental curves.

P. C. Huang and S. R. Stock

December 1, 1986
(test completed 9/3/86)