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ภาคผนวก

ภาคผนวก ก

ดิฟเฟอเรนเชียลสแกนนิงแคลอรีมิเตอร์เทอร์โมแกรม

Filename	D:\PE\Pyris\Data\DSCdata\fro \PC.dsd	PET dsd	
Data Collected	7/12/43 14:48:32	Normalized Heat Flow Endo Up (W/g)	Step. 5
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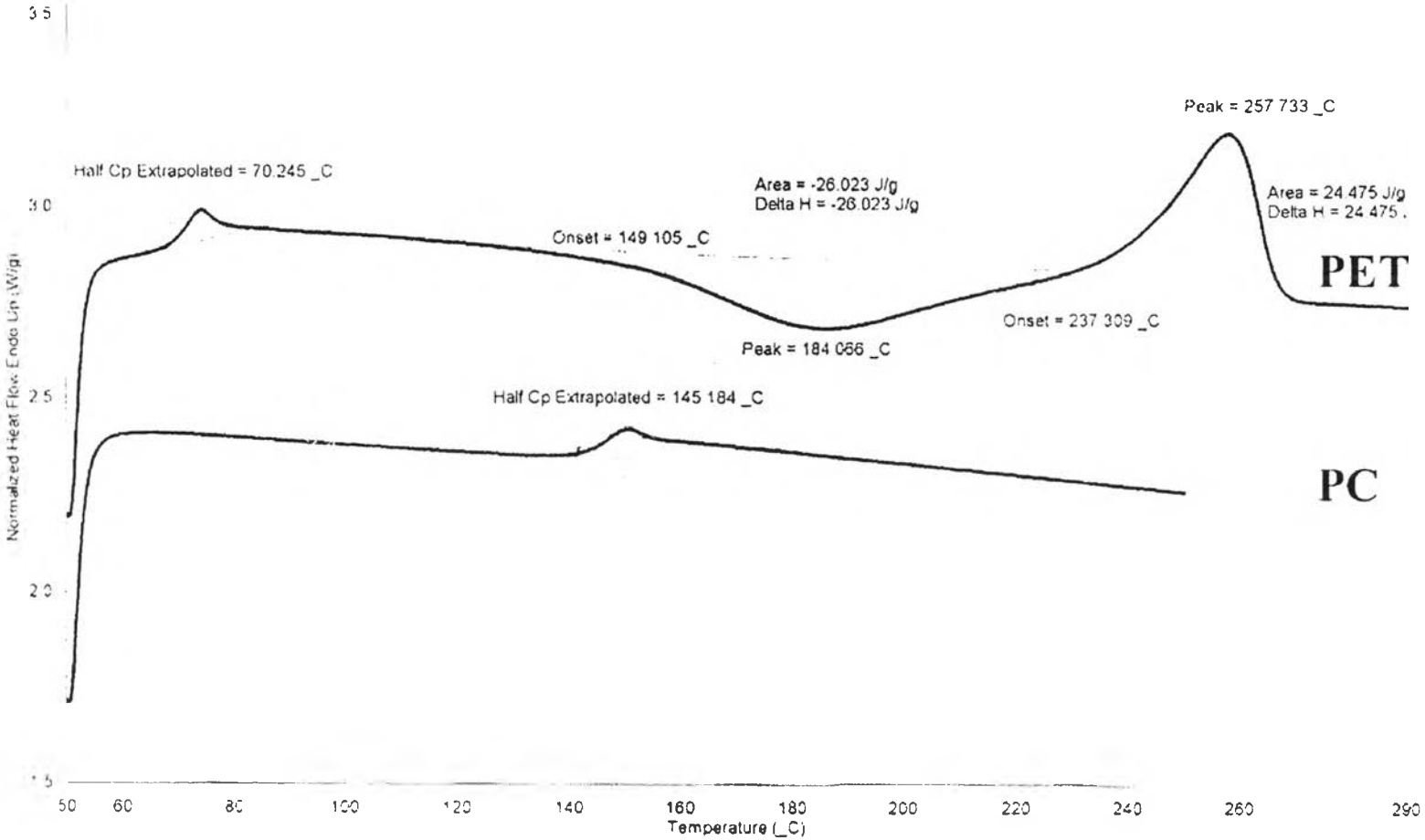
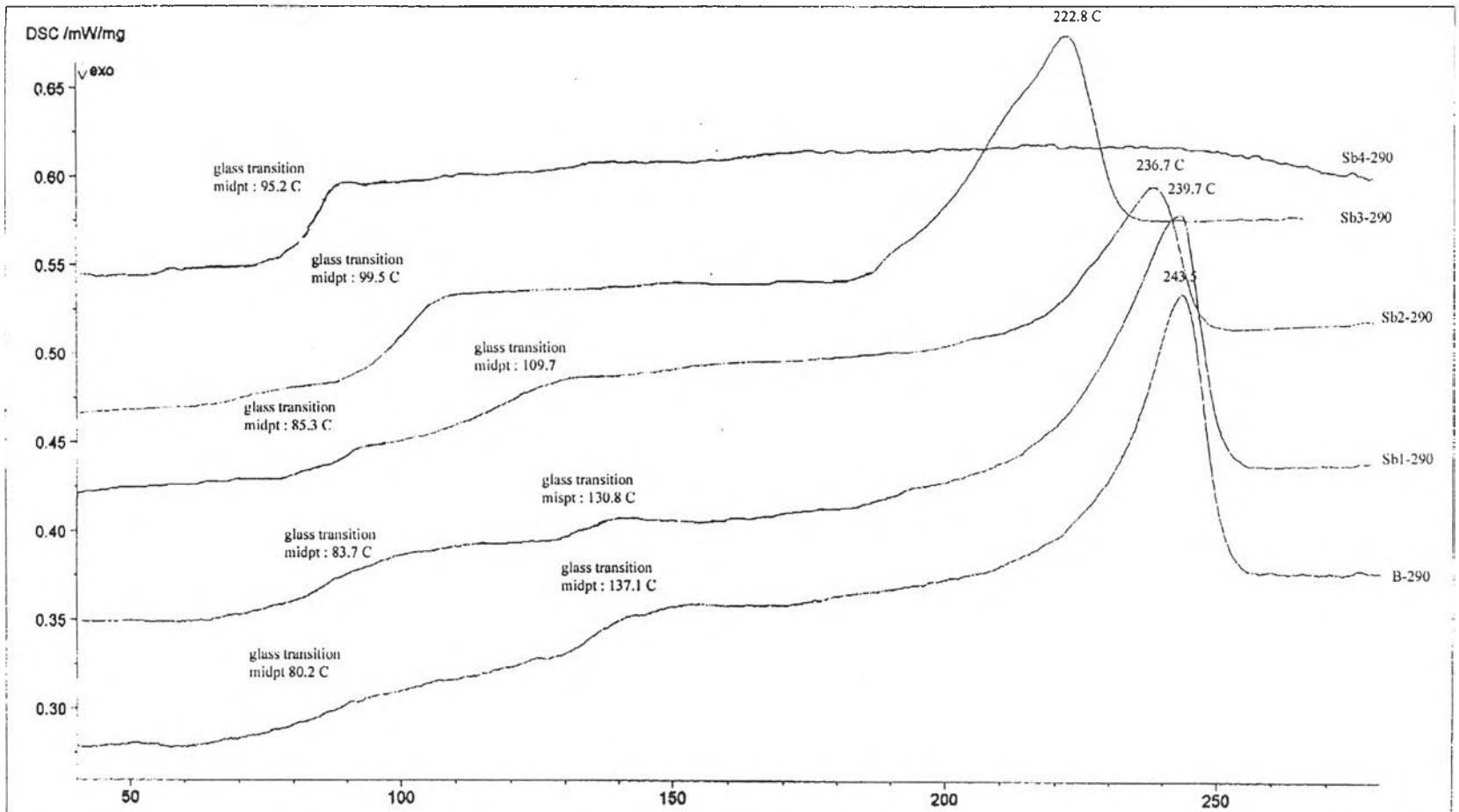
Comment			



NETZSCH-Gerätebau GmbH Thermal Analysis



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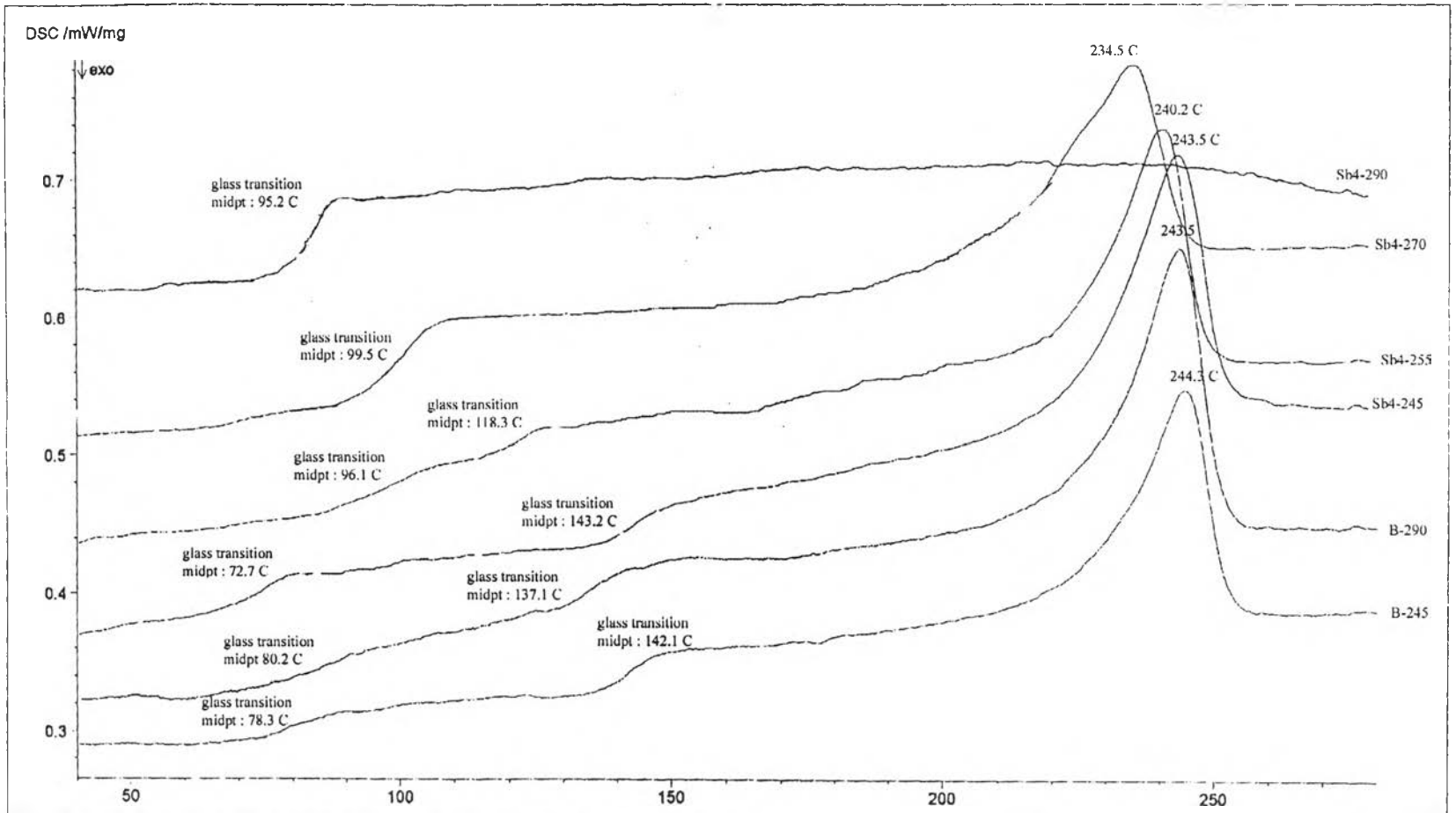
2	B2901	878	B290	10.500	23.05.2001	1/2	22 °C/10.0/280 °C	000/Rg500 uV

NETZSCH-Gerätebau GmbH Thermal Analysis



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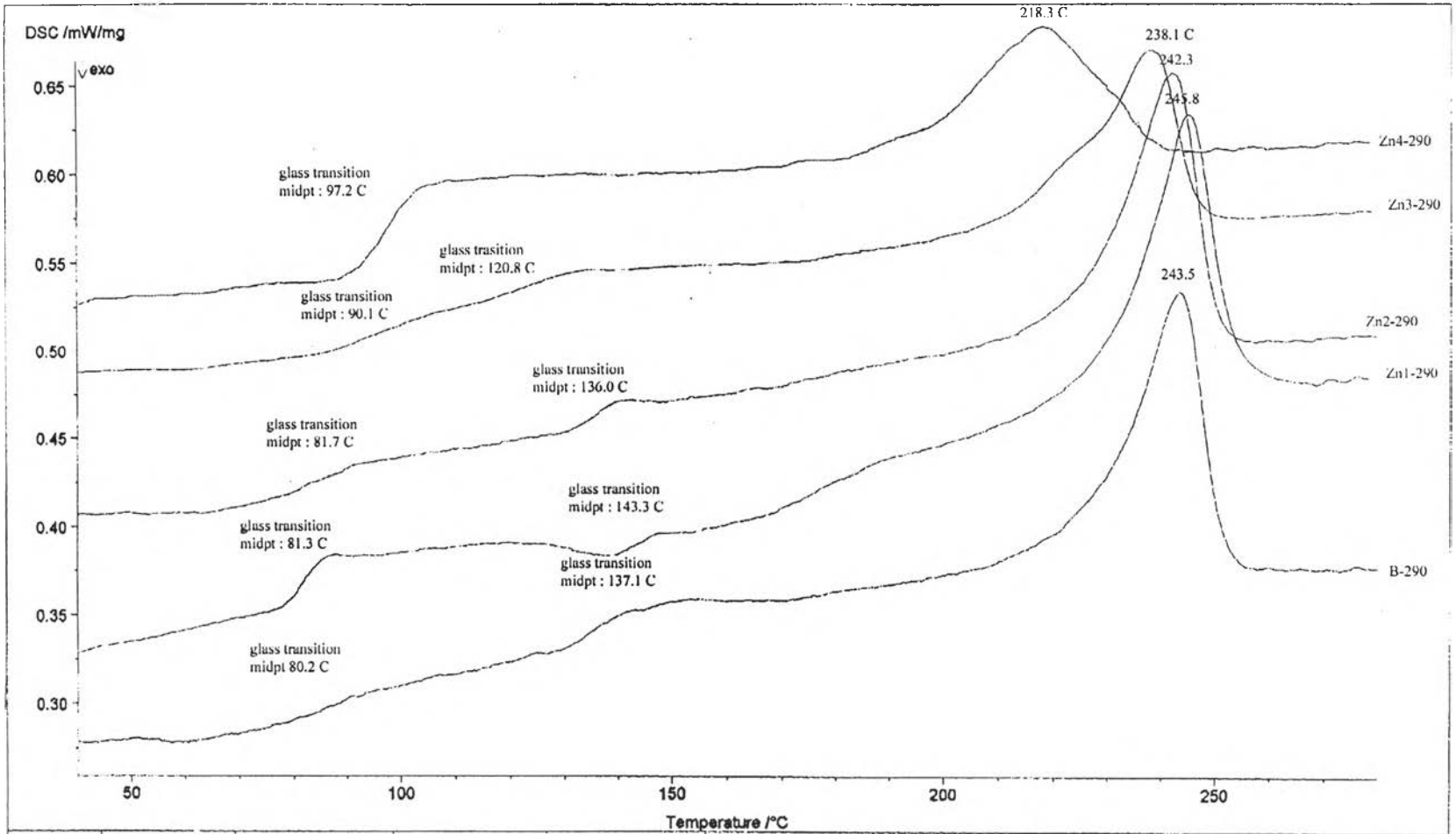
2	B2451	876	B245	9.500	23.05.2001	1/ 2	22 °C/10 0/280 °C	000/Rg500 uV

NETZSCH-Gerätebau GmbH Thermal Analysis



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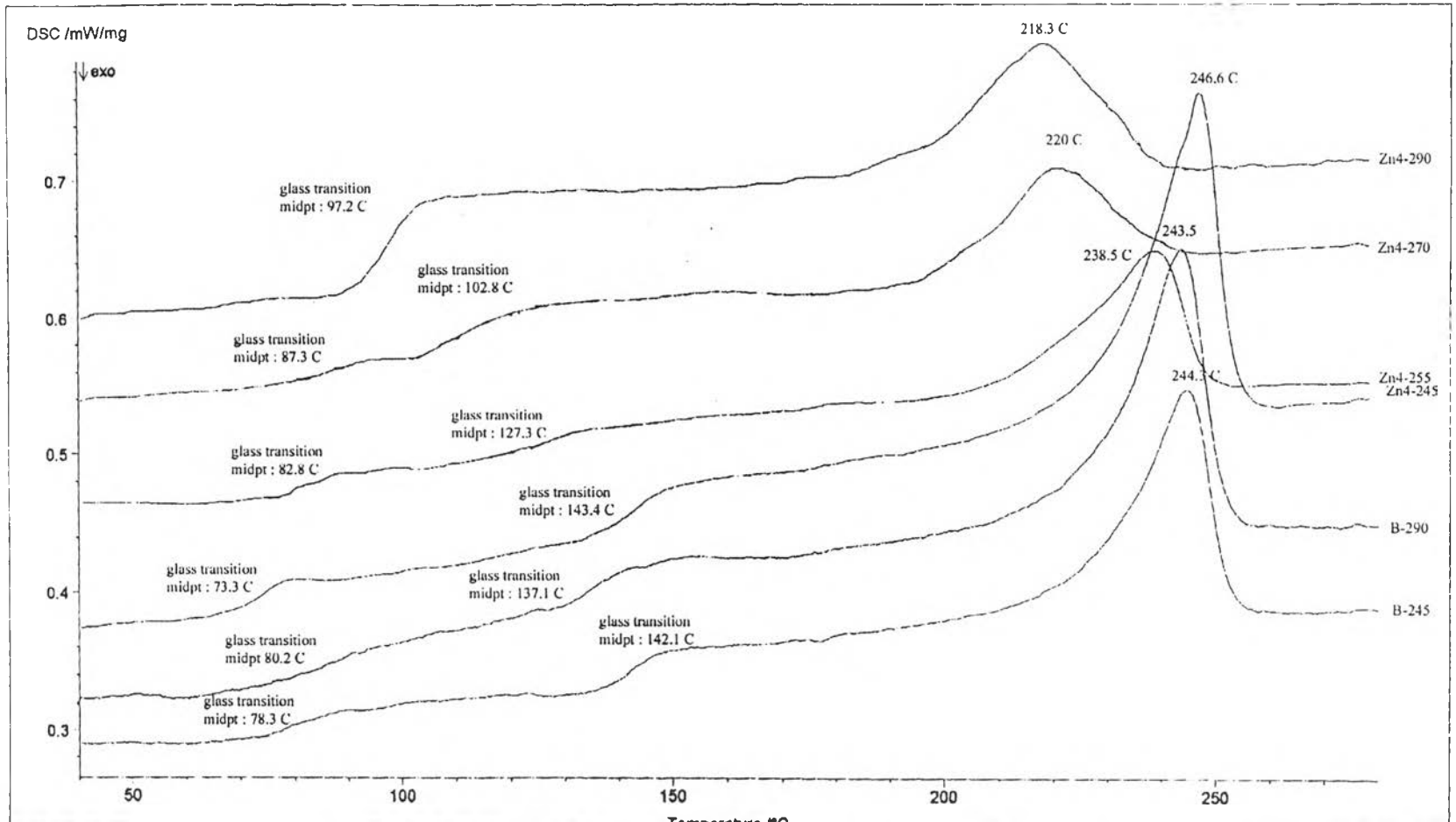
NETZSCH-Gerätebau GmbH Thermal Analysis



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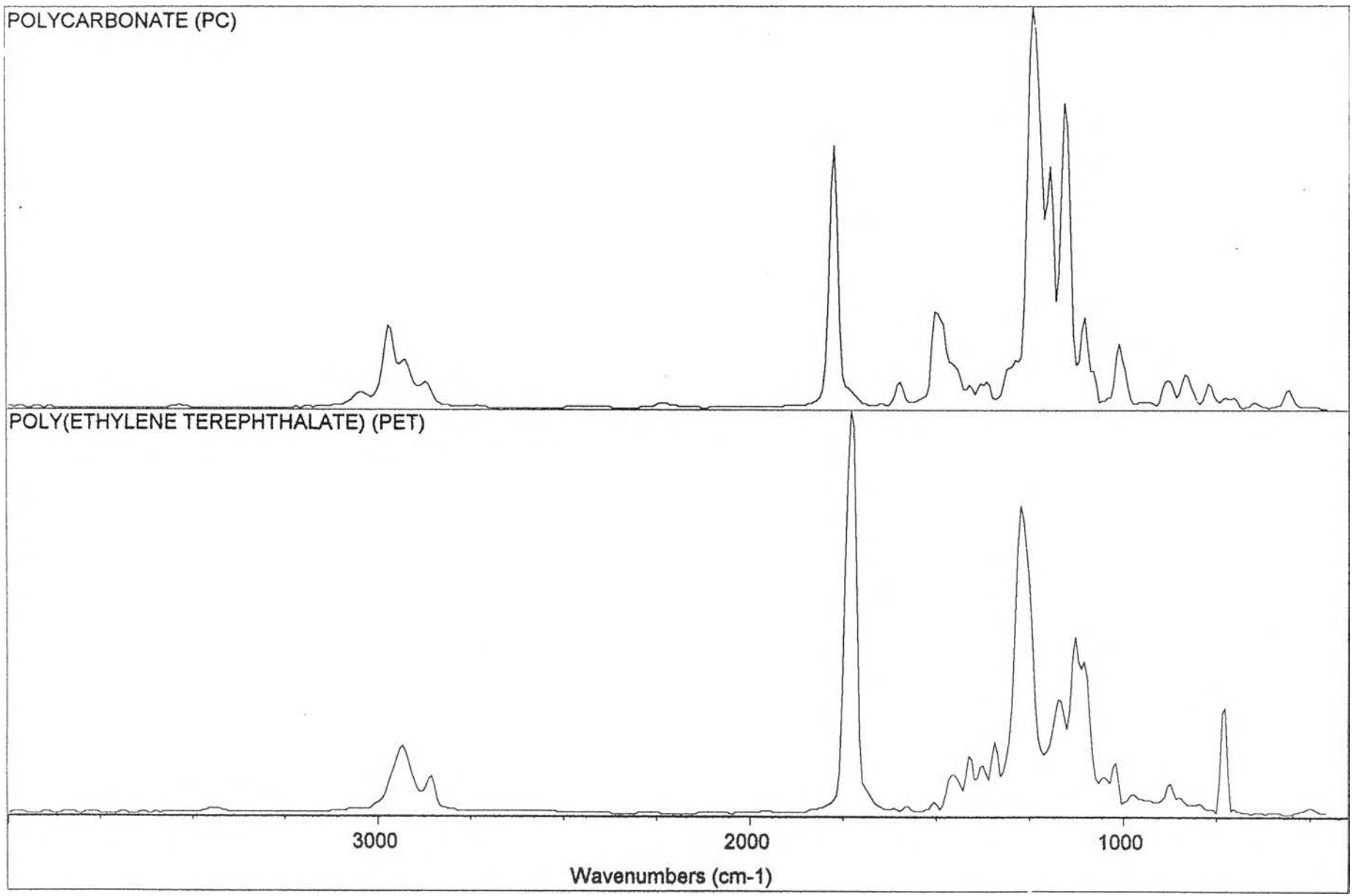
2	B2451	876	B245	9.500	23.05.2001	1/ 2	22 °C/10.0/280 °C	000/Rg500 uV

ภาคผนวก ข

แถบดูดซับจากเครื่องอินฟราเรดสเปกโทรสโคปี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POLY(ETHYLENE TEREPHTHALATE) (PET)
Absorbance
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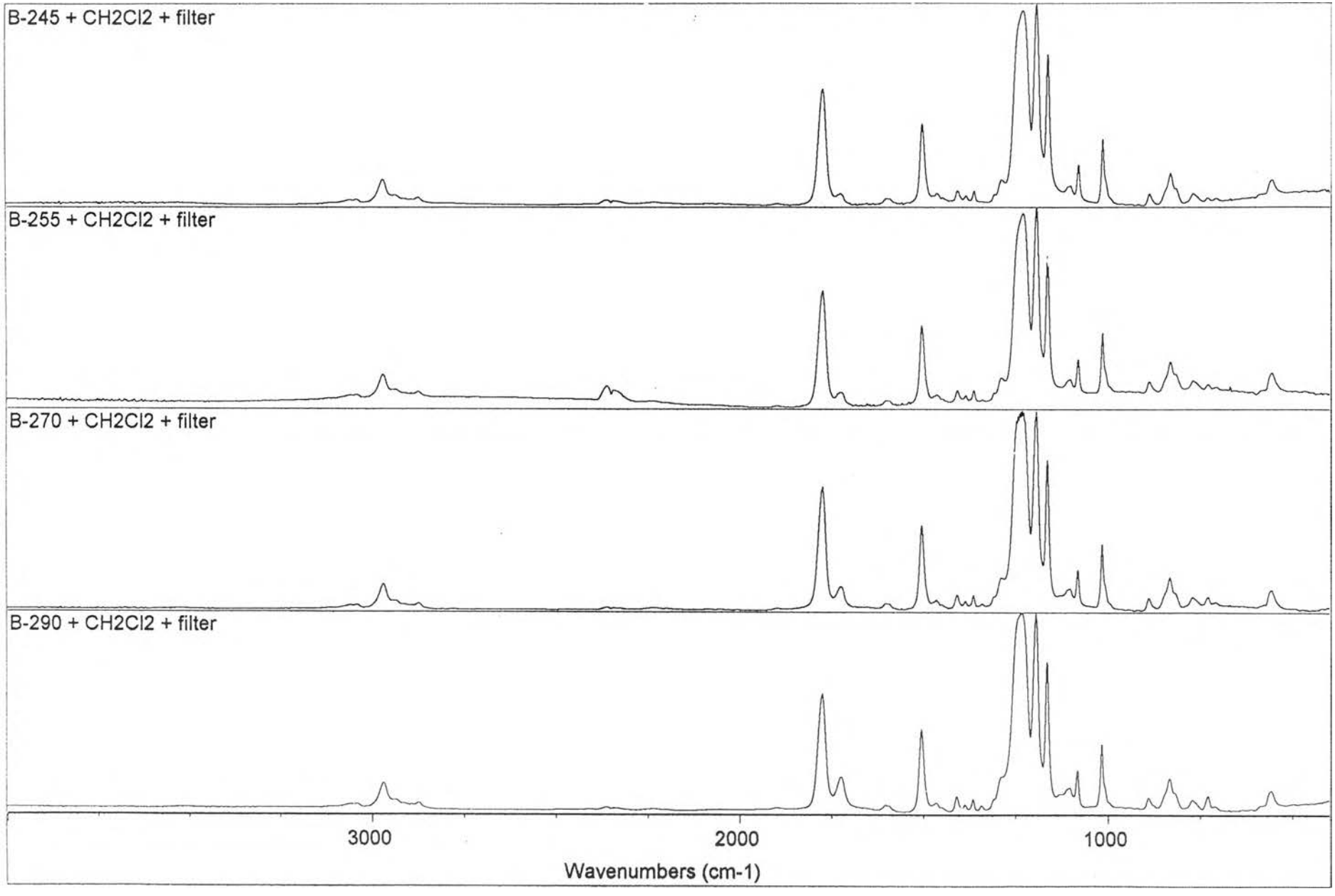
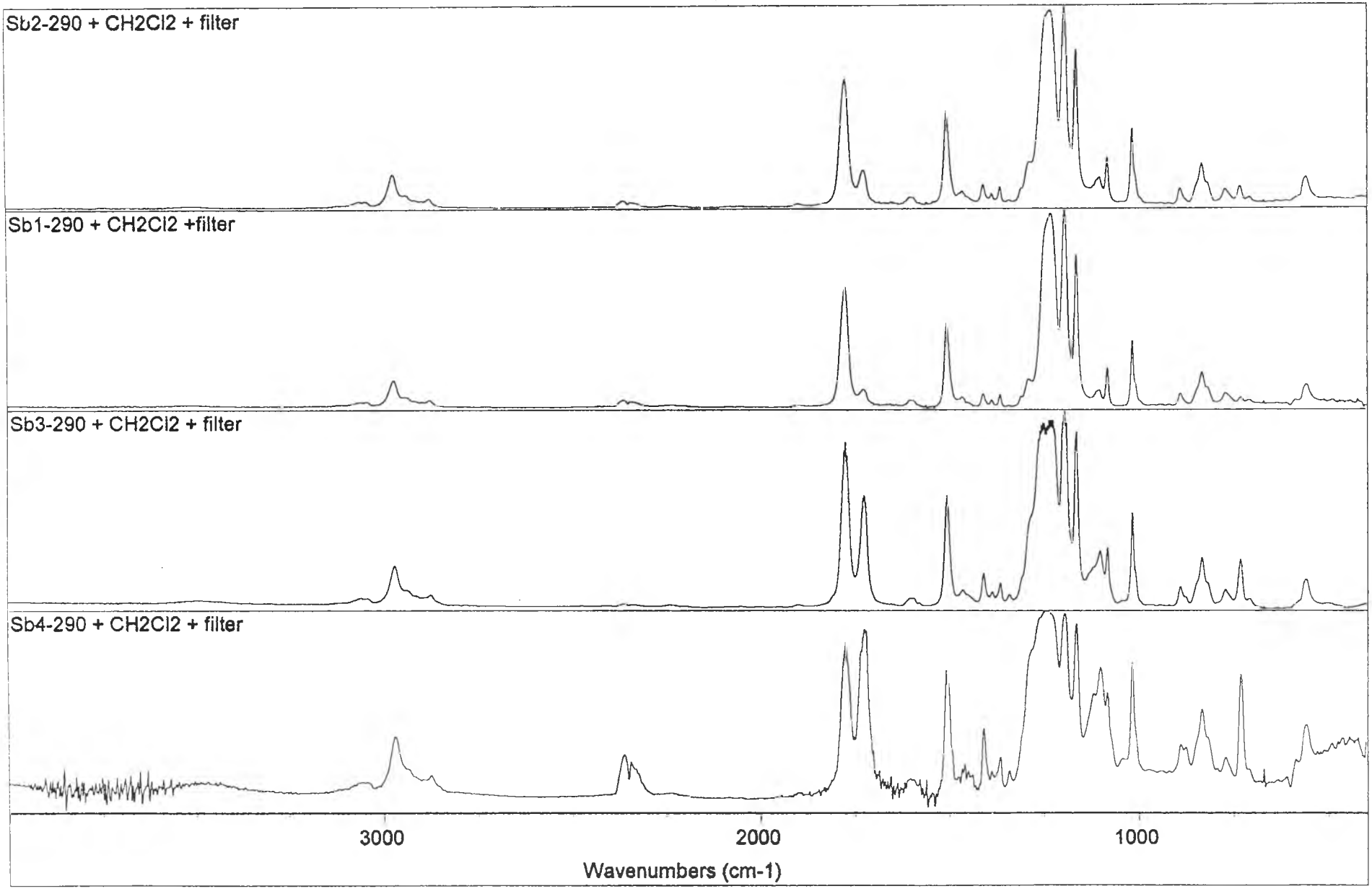
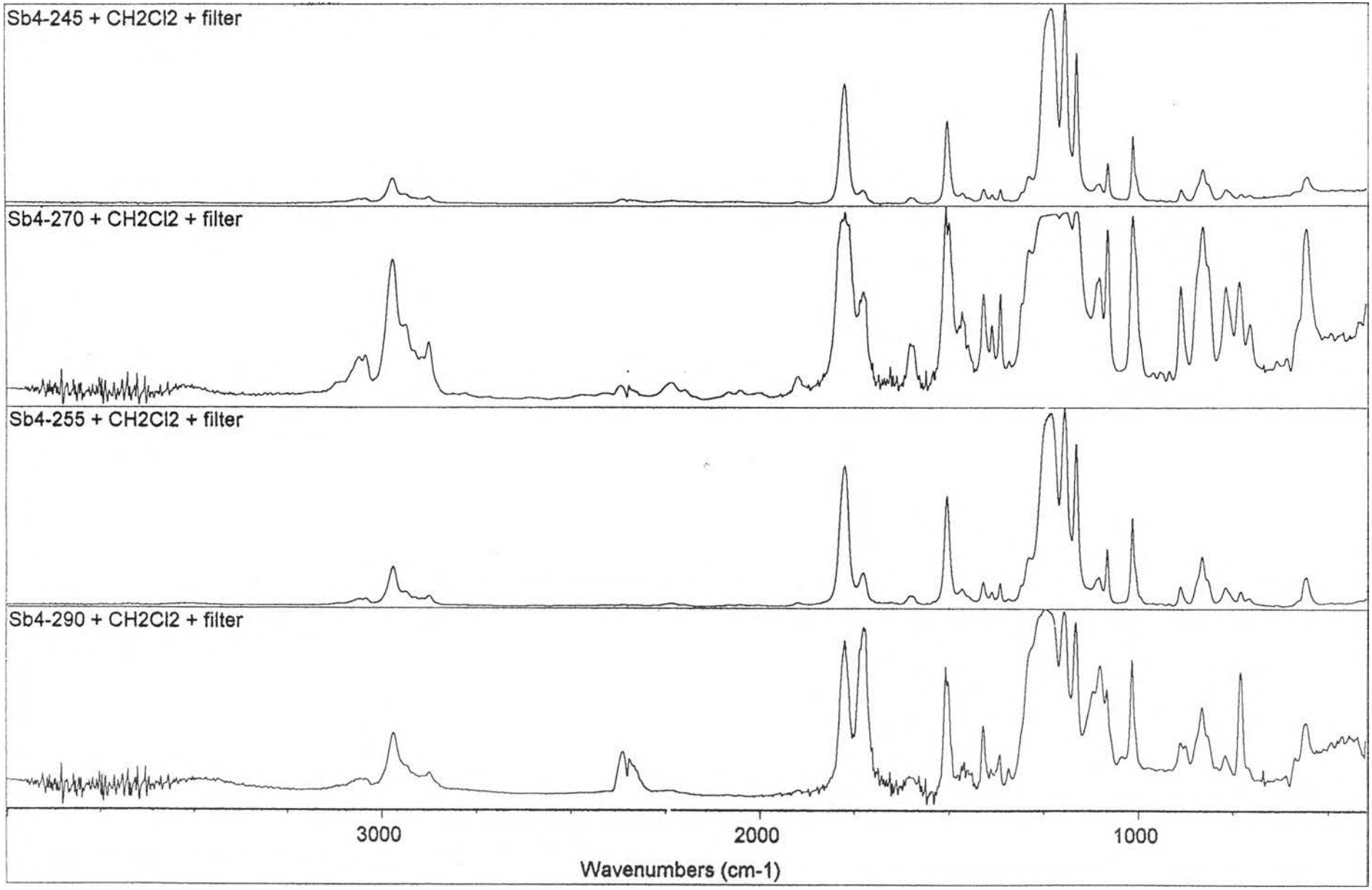
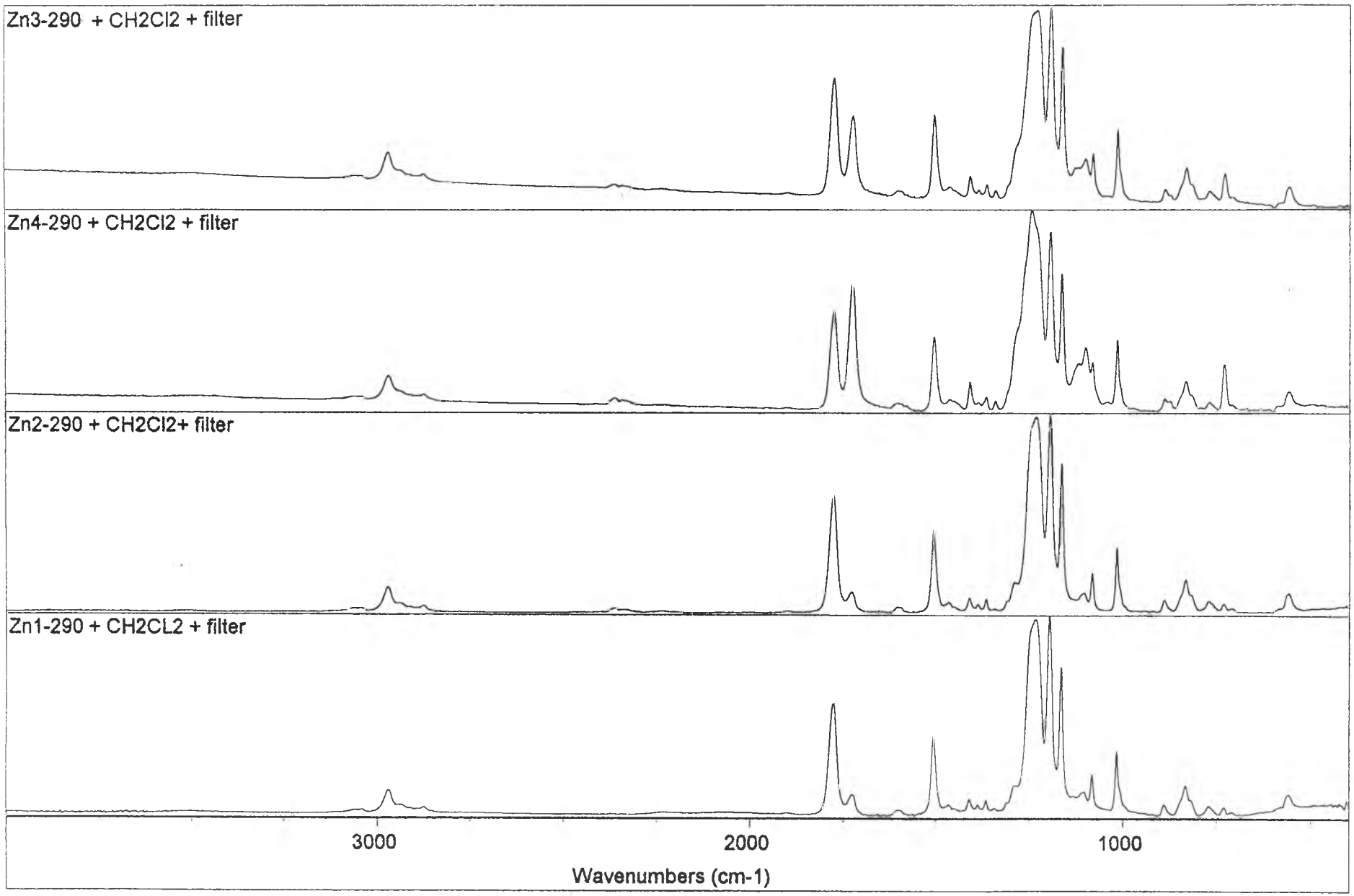
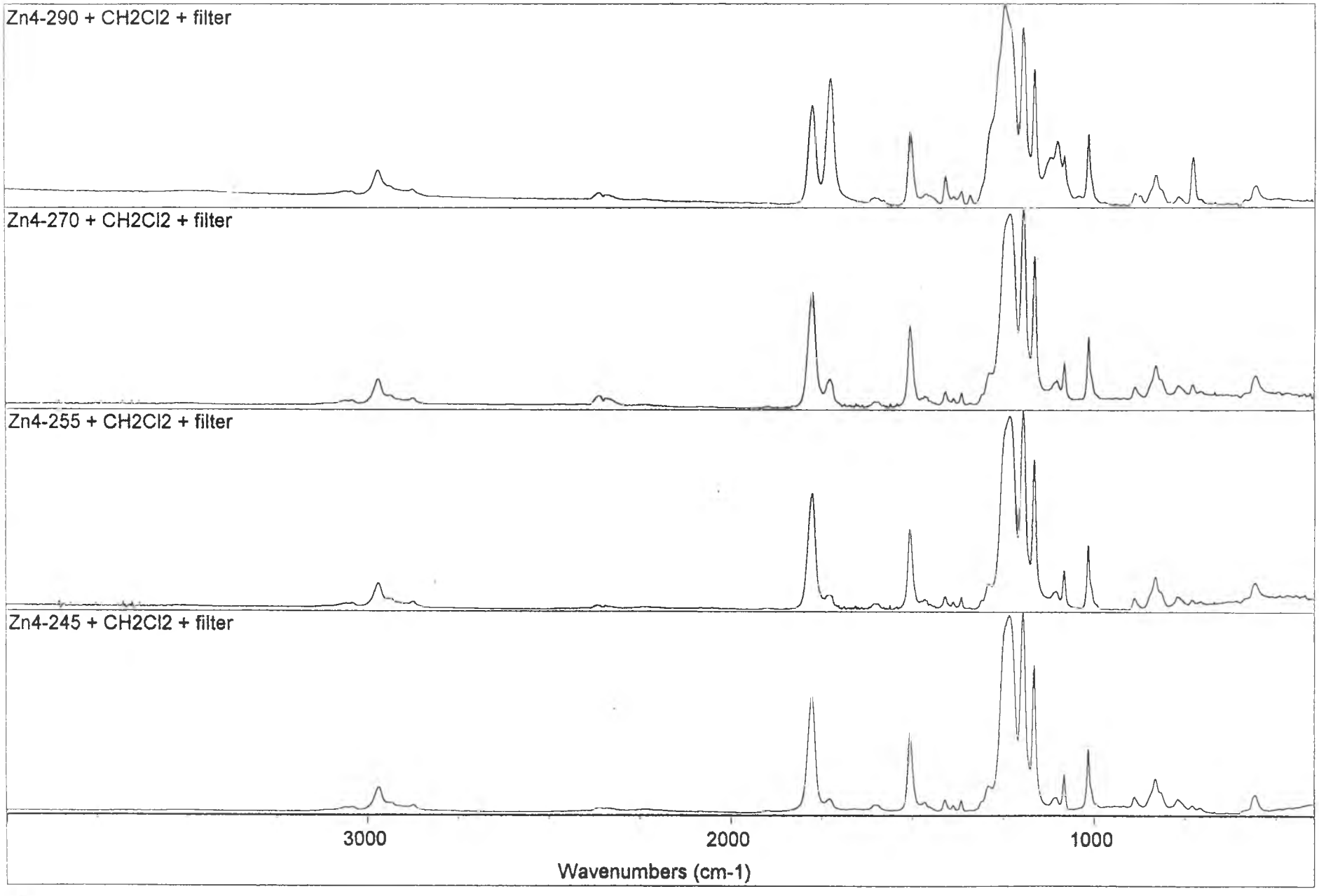
2000
1000
Wavenumbers (cm-1)


B-245 + CH2Cl2 + filter
B-255 + CH2Cl2 + filter
B-270 + CH2Cl2 + filter
B-290 + CH2Cl2 + filter
Absorbance
3000
2000
1000
Wavenumbers (cm-1)


Sb2-290 + CH2Cl2 + filter
Sb1-290 + CH2Cl2 +filter
Sb3-290 + CH2Cl2 + filter
Sb4-290 + CH2Cl2 + filter
Absorbance
3000
2000
1000
Wavenumbers (cm-1)


Sb4-245 + CH2Cl2 + filter
Sb4-270 + CH2Cl2 + filter
Sb4-255 + CH2Cl2 + filter
Sb4-290 + CH2Cl2 + filter
Absorbance
3000
2000
1000
Wavenumbers (cm-1)


Zn3-290 + CH2Cl2 + filter
Zn4-290 + CH2Cl2 + filter
Zn2-290 + CH2Cl2+ filter
Zn1-290 + CH2CL2 + filter
Absorbance
3000
2000
1000
Wavenumbers (cm-1)


Zn4-290 + CH2Cl2 + filter
Zn4-270 + CH2Cl2 + filter
Zn4-255 + CH2Cl2 + filter
Zn4-245 + CH2Cl2 + filter
Absorbance
3000
2000
1000
Wavenumbers (cm-1)

ภาคผนวก ค

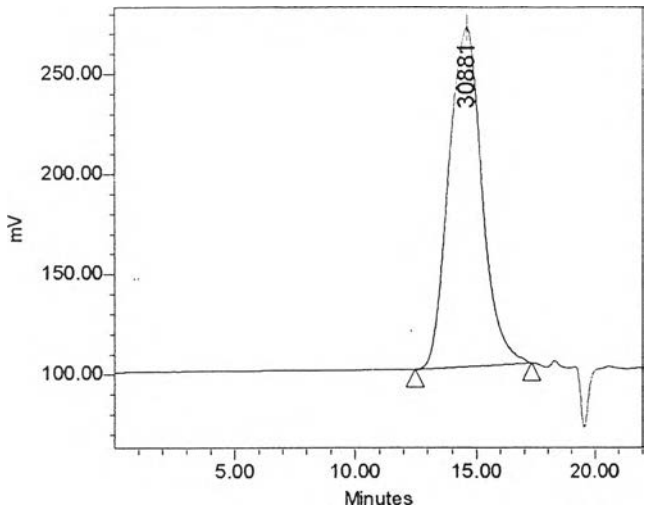
น้ำหนักโมเลกุลจากเครื่องเจลเปอร์มีเอชันโครมาโทกราฟี

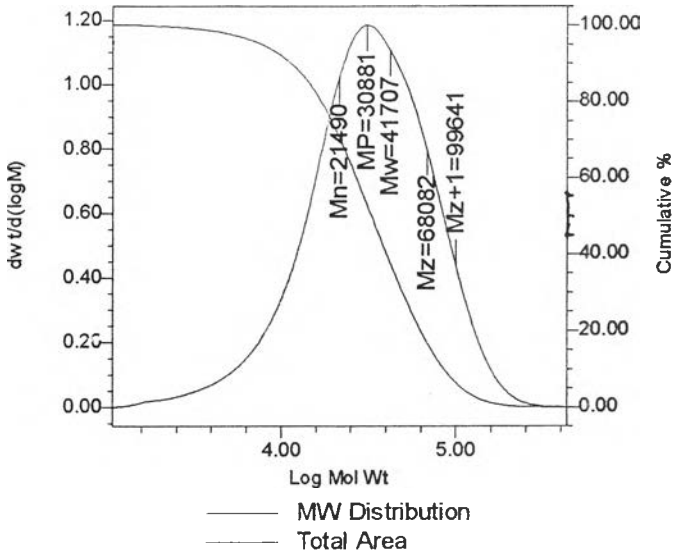
Current Date 7/25/2001

Sample Information

SampleName	PC	Sample Type	Broad Unknown
Vial	1	Date Acquired	7/25/2001 10:36:38 AM
Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:57:17 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		21490	41707	30881	68082	99641	1.940792

Current Date 7/25/2001

Sample Information

SampleName	B-245	Sample Type	Broad Unknown
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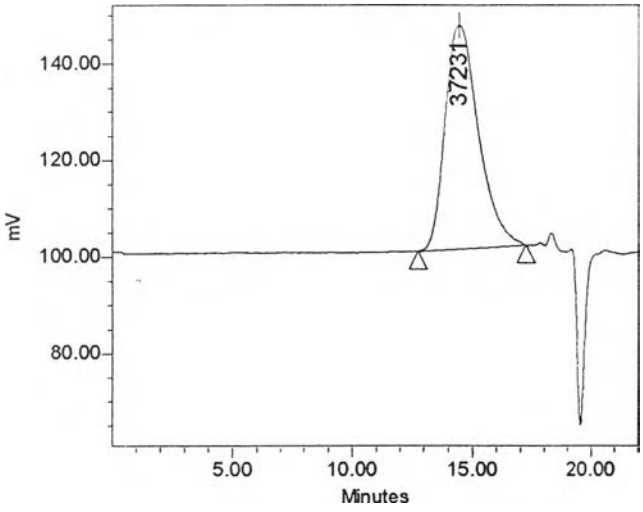
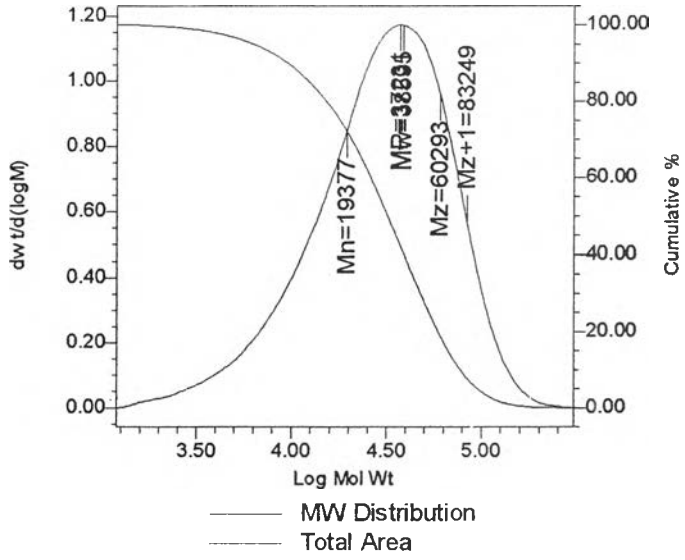
Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:53:30 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		19377	38595	37231	60293	83249	1.991777

Current Date 7/25/2001

Sample Information

SampleName	B-290	Sample Type	Broad Unknown
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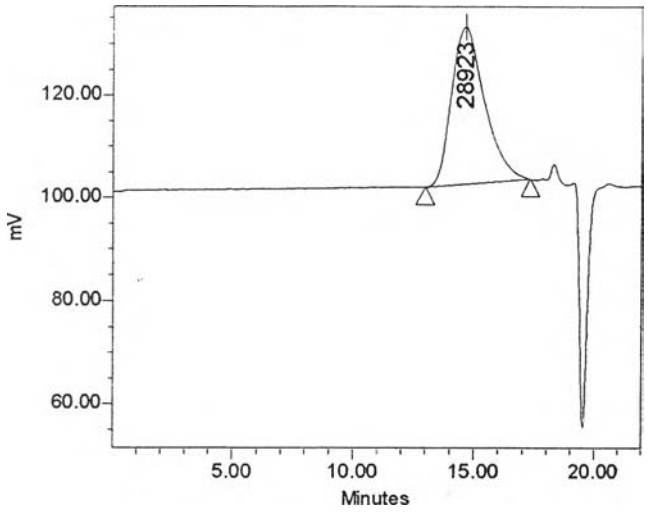
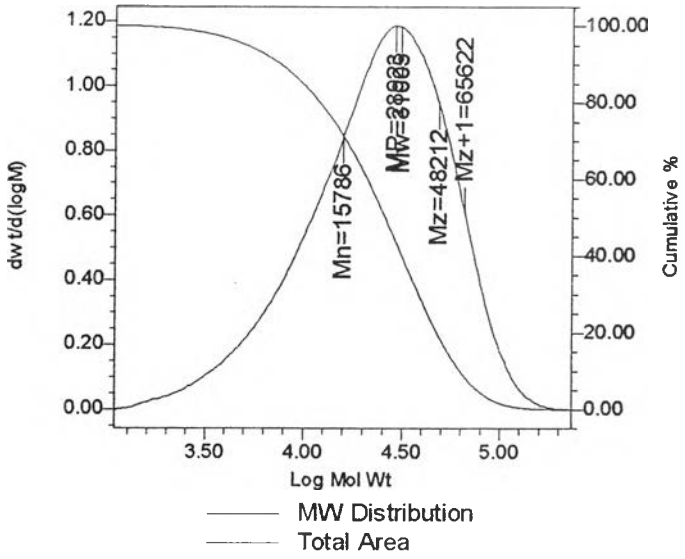
Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:53:36 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

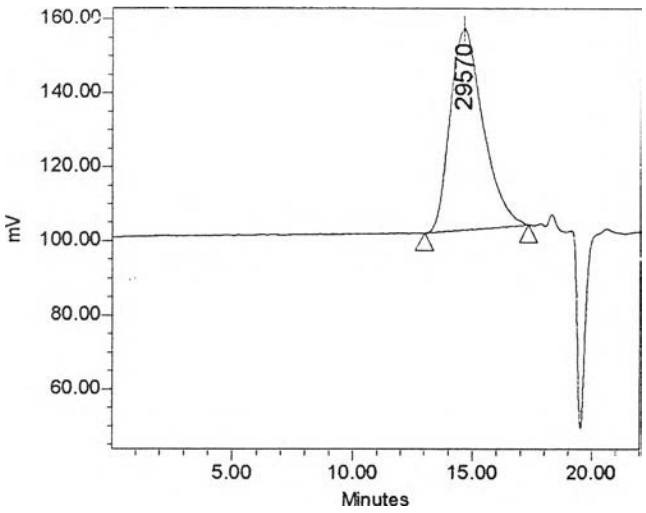
	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		15786	31005	28923	48212	65622	1.964056

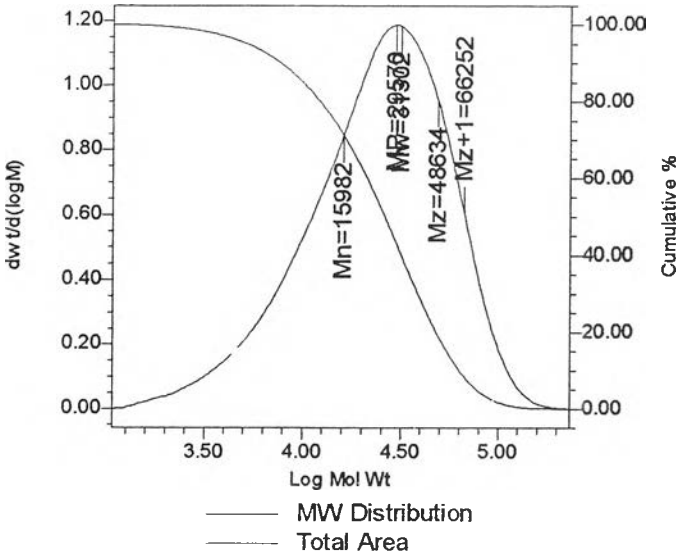
Current Date 7/25/2001

Sample Information

SampleName	Sb1-290	Sample Type	Broad Unknown
Vial	2	Date Acquired	7/25/2001 11:08:49 AM
Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:57:25 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		15982	31302	29570	48634	66252	1.958611

Current Date 7/25/2001

Sample Information

SampleName	Sb4-290	Sample Type	Broad Unknown
Vial	3	Date Acquired	7/25/2001 11:34:33 AM
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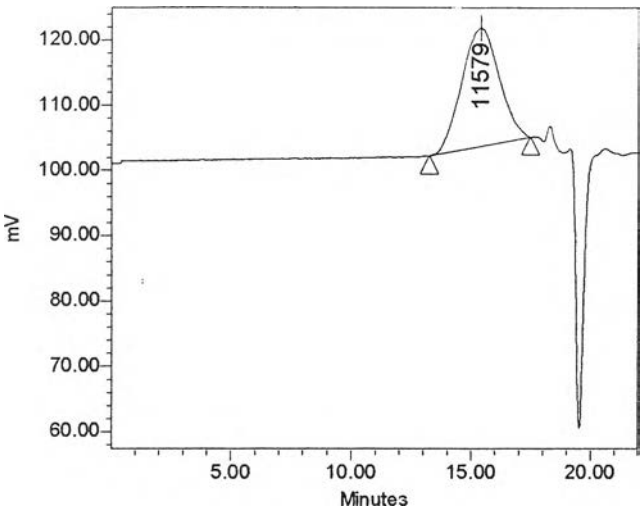
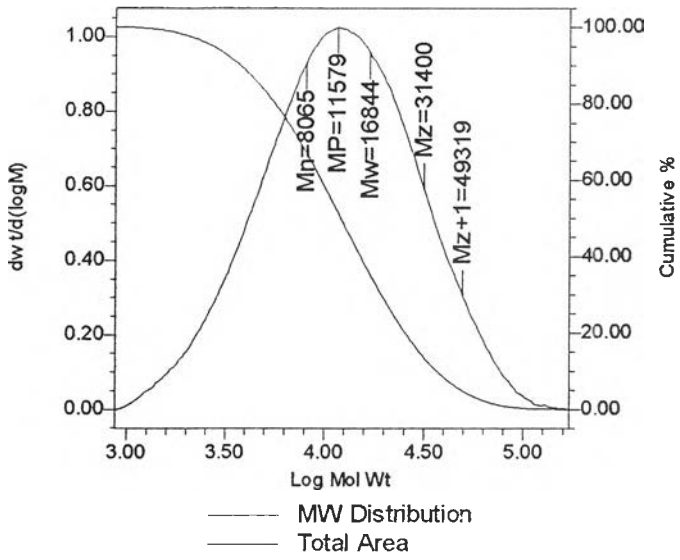
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:57:53 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		8065	16844	11579	31400	49319	2.088464

Current Date 7/25/2001

Sample Information

SampleName	Sb4-245	Sample Type	Broad Unknown
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Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
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Run Time	22.0 Minutes		

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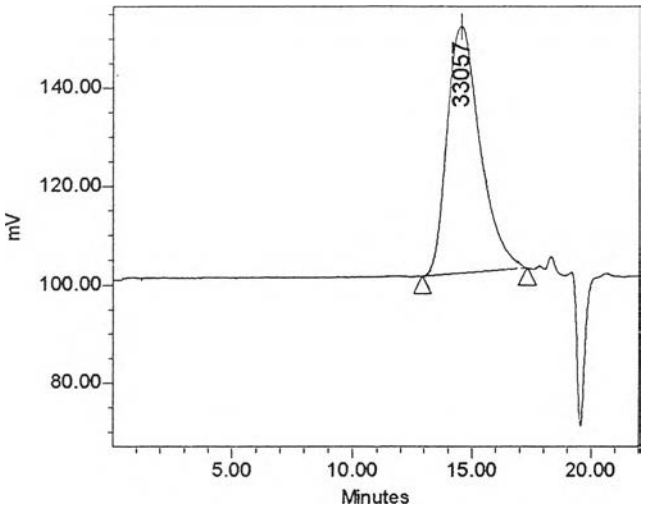

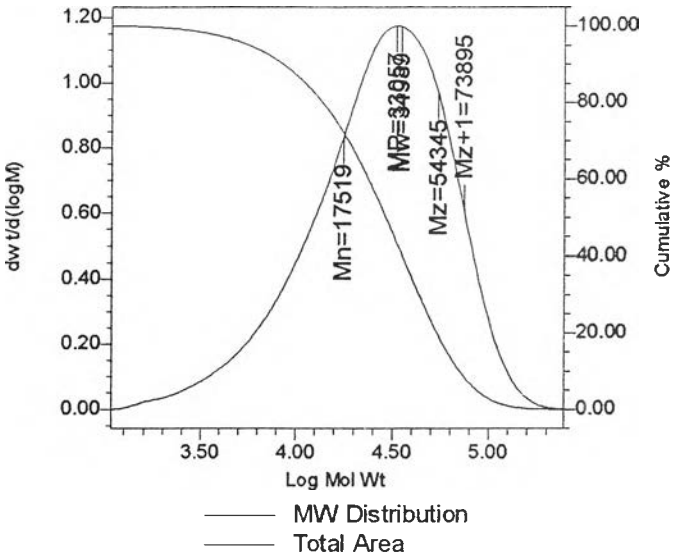

GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		17519	34989	33057	54345	73895	1.997199

Current Date 7/25/2001

Sample Information

SampleName	Zn1-290	Sample Type	Broad Unknown
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Injection Volume	100.00 ul	Processing Method	proc_A
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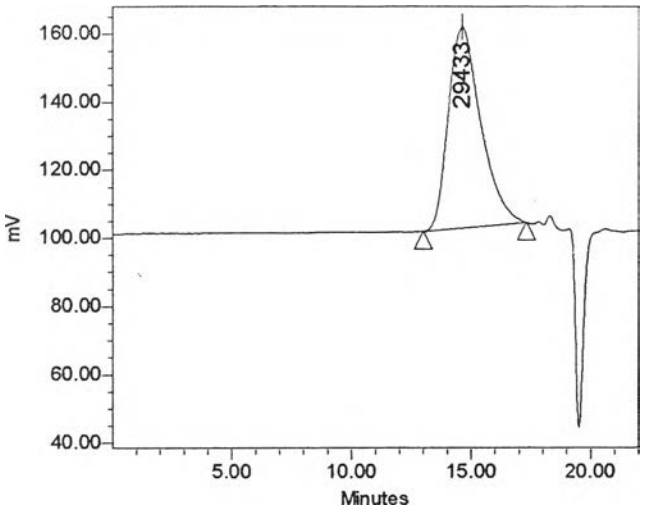
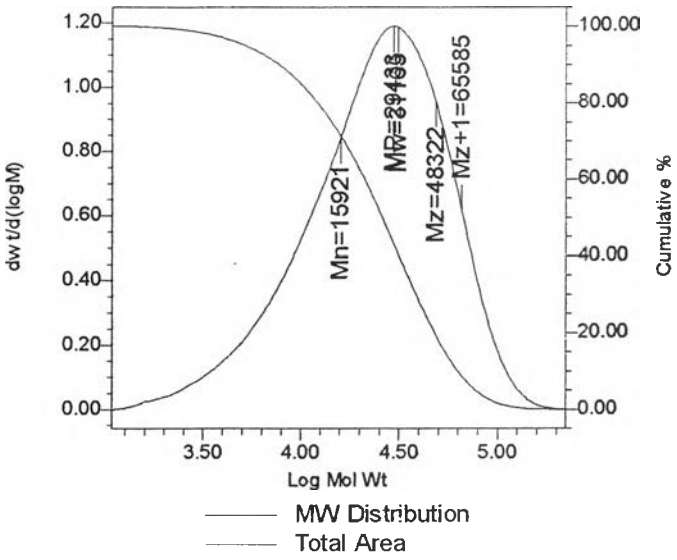
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
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Current Date 7/25/2001

Sample Information

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Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:56:28 PM
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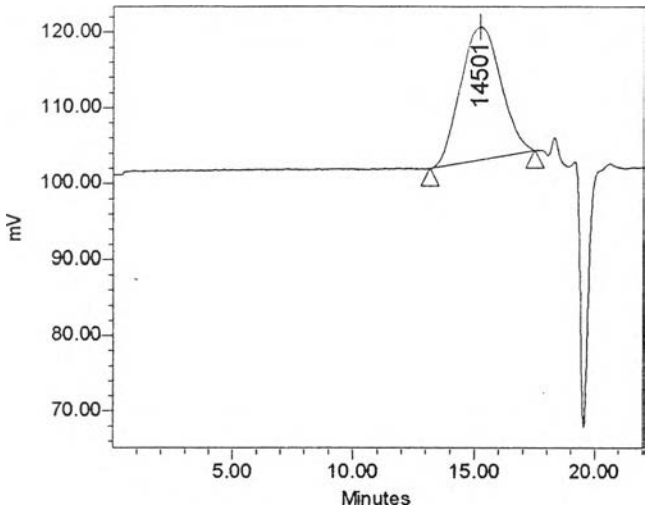
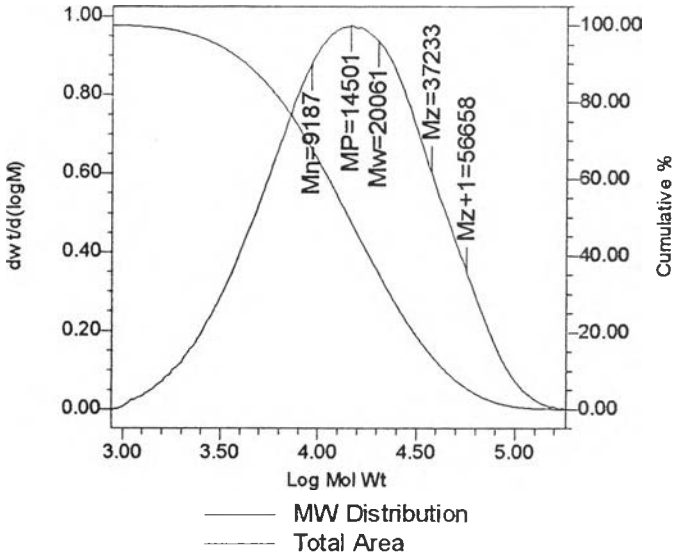
Auto-Scaled Chromatogram





GPC Results

	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		9187	20061	14501	37233	56658	2.183572

Current Date 7/25/2001

Sample Information

SampleName	Zn4-245	Sample Type	Broad Unknown
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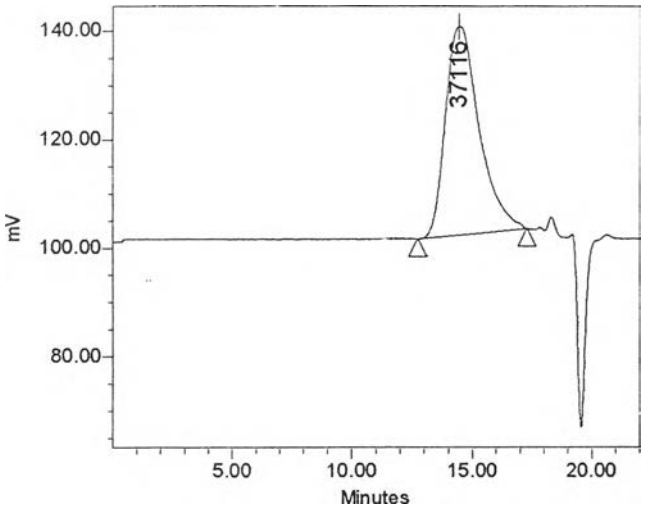
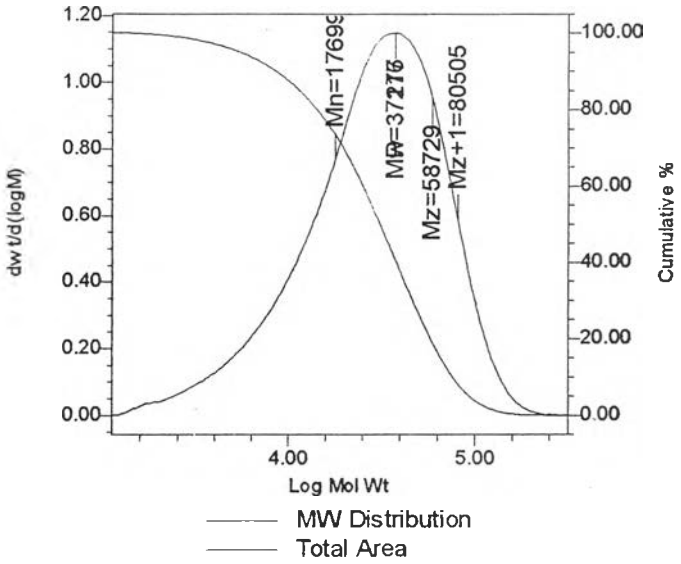
Injection	1	Acq Method Set	meth_A
Injection Volume	100.00 ul	Processing Method	proc_A
Channel	SATIN	Date Processed	7/25/2001 2:55:47 PM
Run Time	22.0 Minutes		

Auto-Scaled Chromatogram





GPC Results

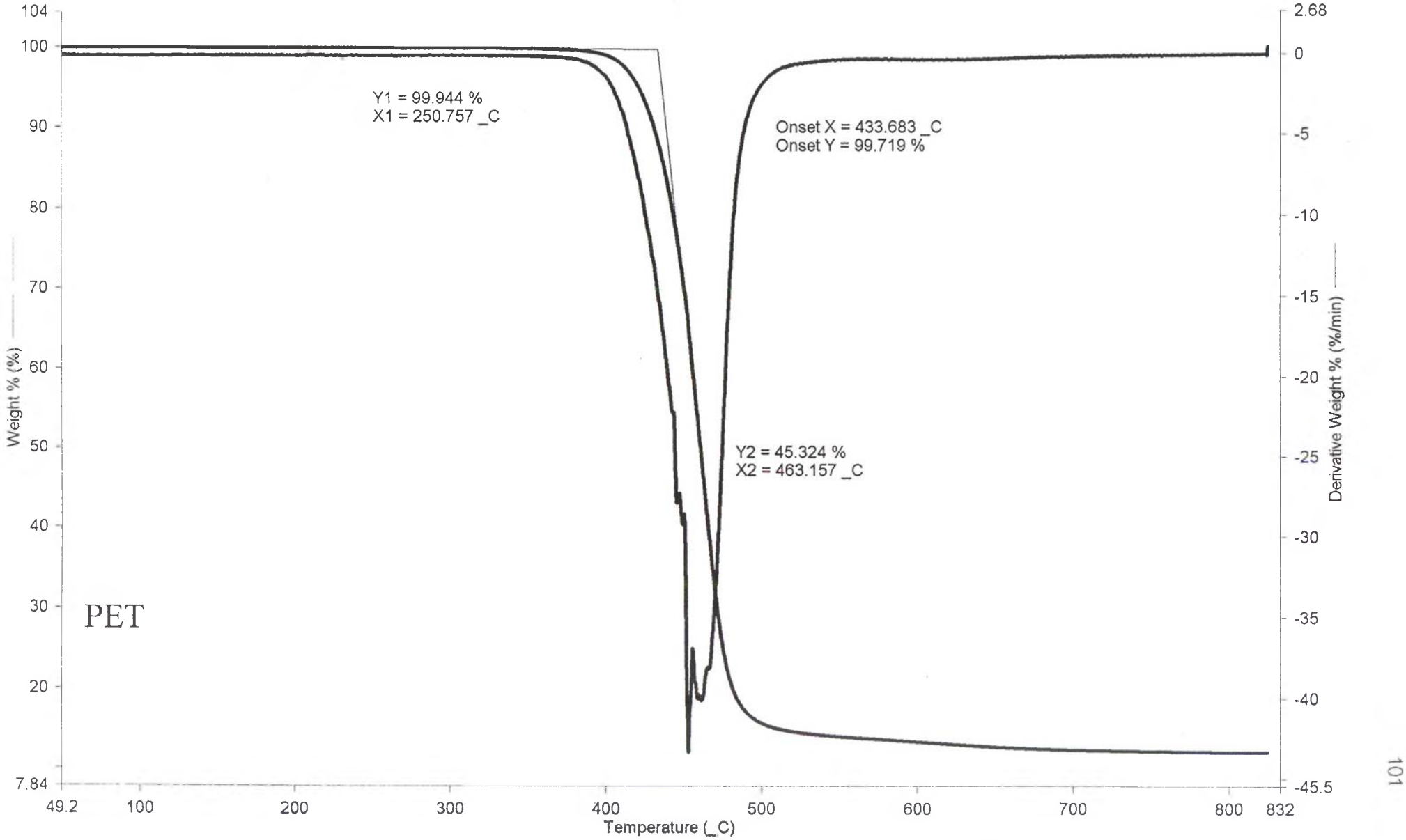
	Dist Name	Mn	Mw	MP	Mz	Mz+1	Polydispersity
1		17699	37277	37116	58729	80505	2.106111

ภาคผนวก ง

เทอร์โมแกรวิเมทรีเทอร์โมแกรม

Filename:	D:\PE\Pyris\Data\TGAdata\Un...\PET.tgd
Data Collected:	19/7/44 10:20:50
Operator ID:	busarin
Sample ID:	PET
Sample Weight:	8.222 mg
Comment:	

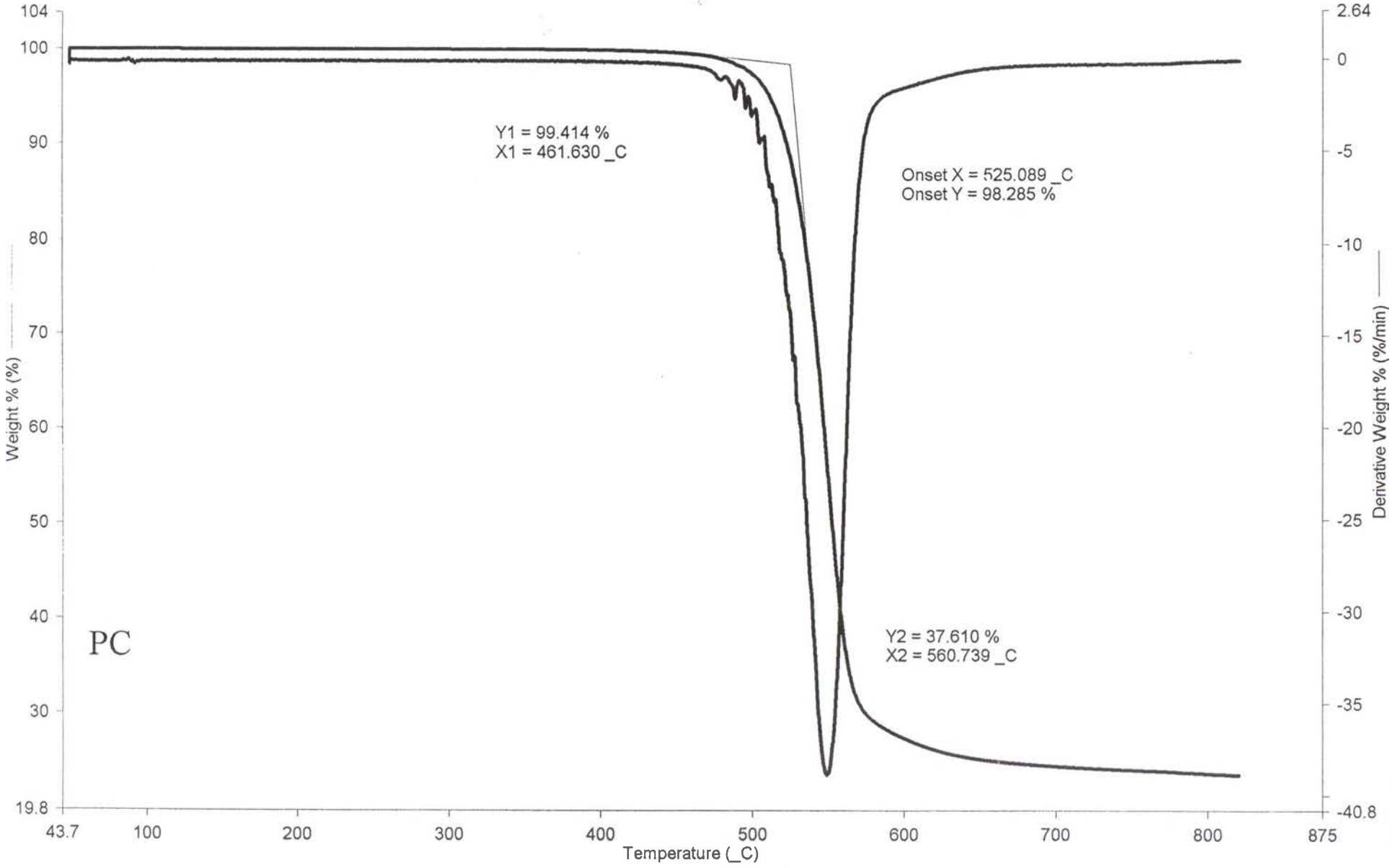
PET: PET.tgd
Unsubtracted Weight % (%) : Step: 1
PET: PET.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1) Heat from 50.00_C to 800.00_C at 20.00_C/min 19/7/44 17:24:10

Filename:	D:\PE\Pyris\Data\TGAdata\Uni...\pc.tgd
Data Collected:	19/7/44 11:31:47
Operator ID:	busarin
Sample ID:	PC
Sample Weight:	10.081 mg
Comment:	

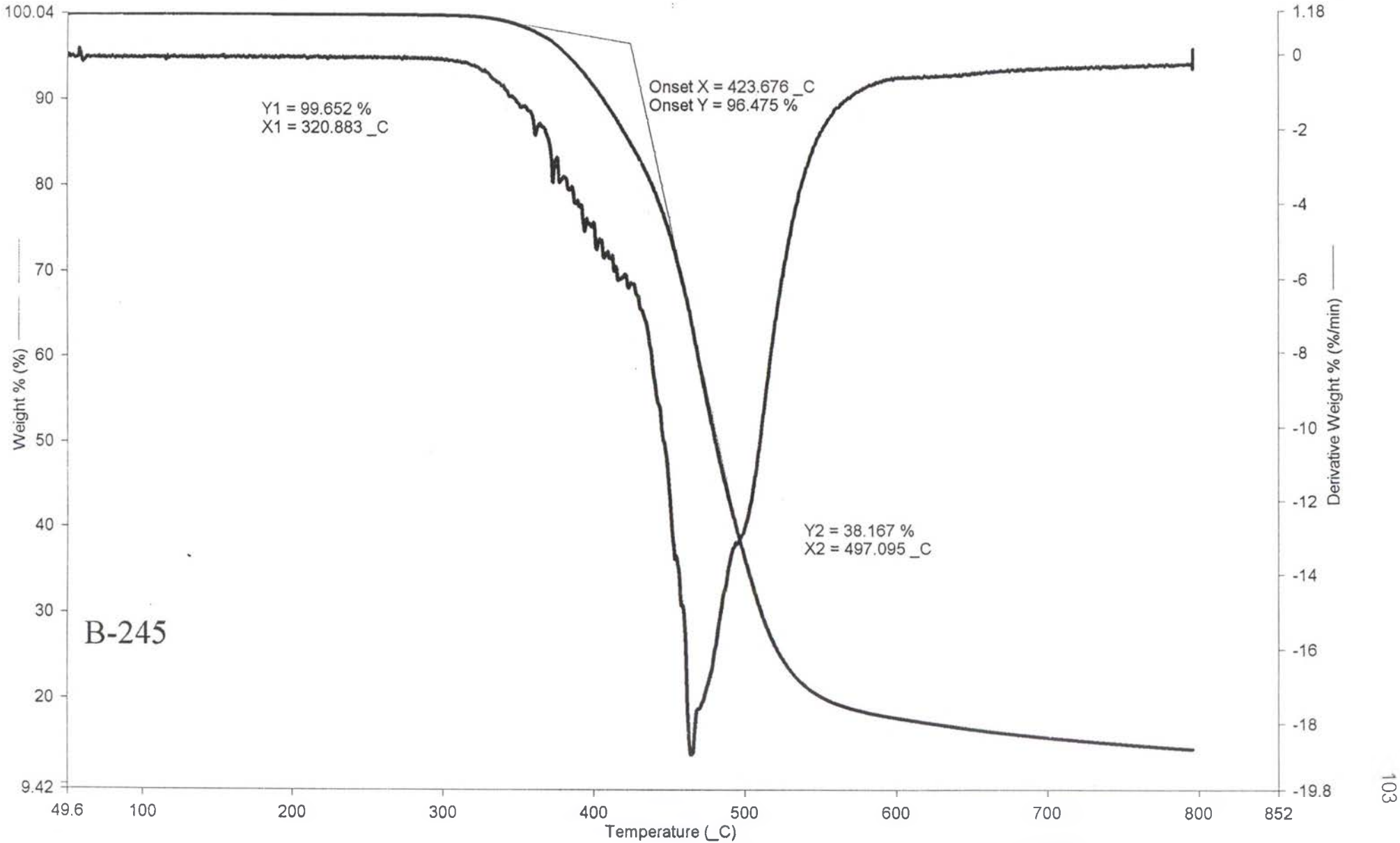
PC: pc.tgd
Unsubtracted Weight % (%) : Step: 1
PC: pc.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:30:25

Filename:	D:\PE\Pyris\Data\TGAdata\...\B-245.tgd
Data Collected:	19/7/44 9:17:03
Operator ID:	busarin
Sample ID:	B-245
Sample Weight:	7.970 mg
Comment:	

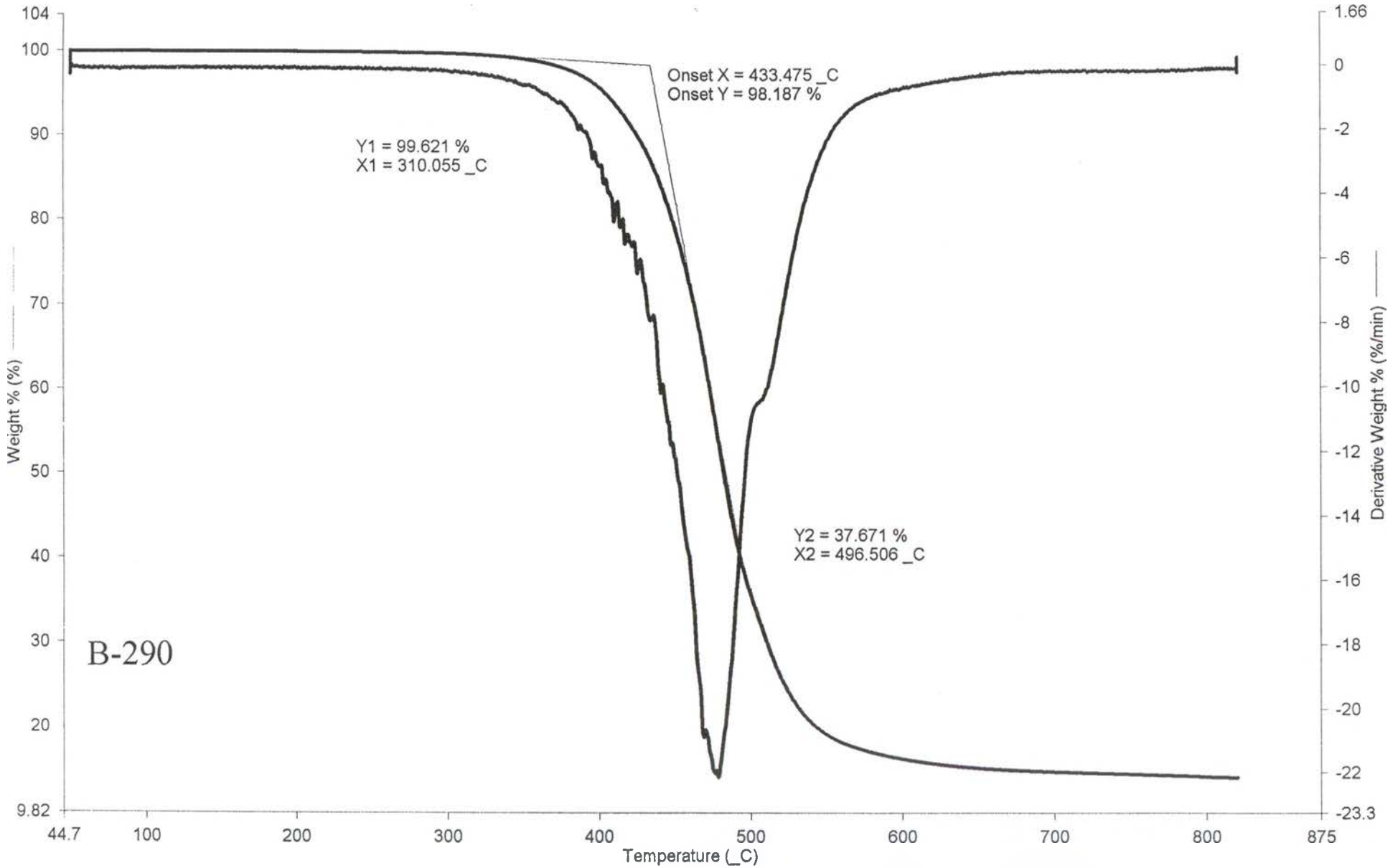
B-245: B-245.tgd
Unsubtracted Weight % (%) : Step: 1
B-245: B-245.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:46:44

Filename:	D:\PE\Pyris\Data\TGAdata\...\b-290.tgd
Data Collected:	19/7/44 12:43:22
Operator ID:	busarin
Sample ID:	B-290
Sample Weight:	7.644 mg
Comment:	

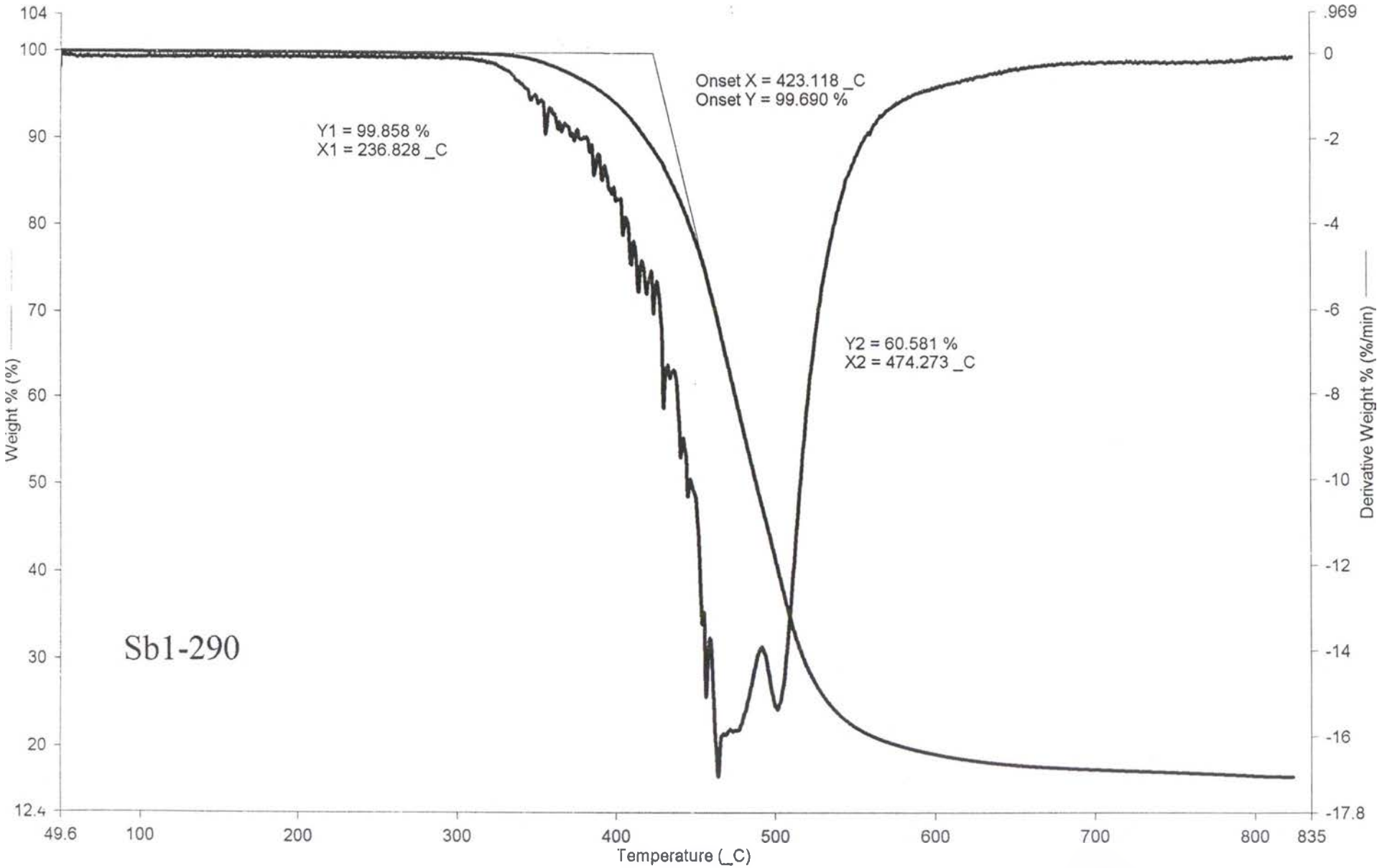
B-290: b-290.tgd
Unsubtracted Weight % (%) : Step: 1
B-290: b-290.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:40:03

Filename:	D:\PE\Pyris\Data\TGAdat...\Sb1-290.tgd
Data Collected:	19/7/44 17:09:34
Operator ID:	busarin
Sample ID:	Sb1-290
Sample Weight:	8.944 mg
Comment:	

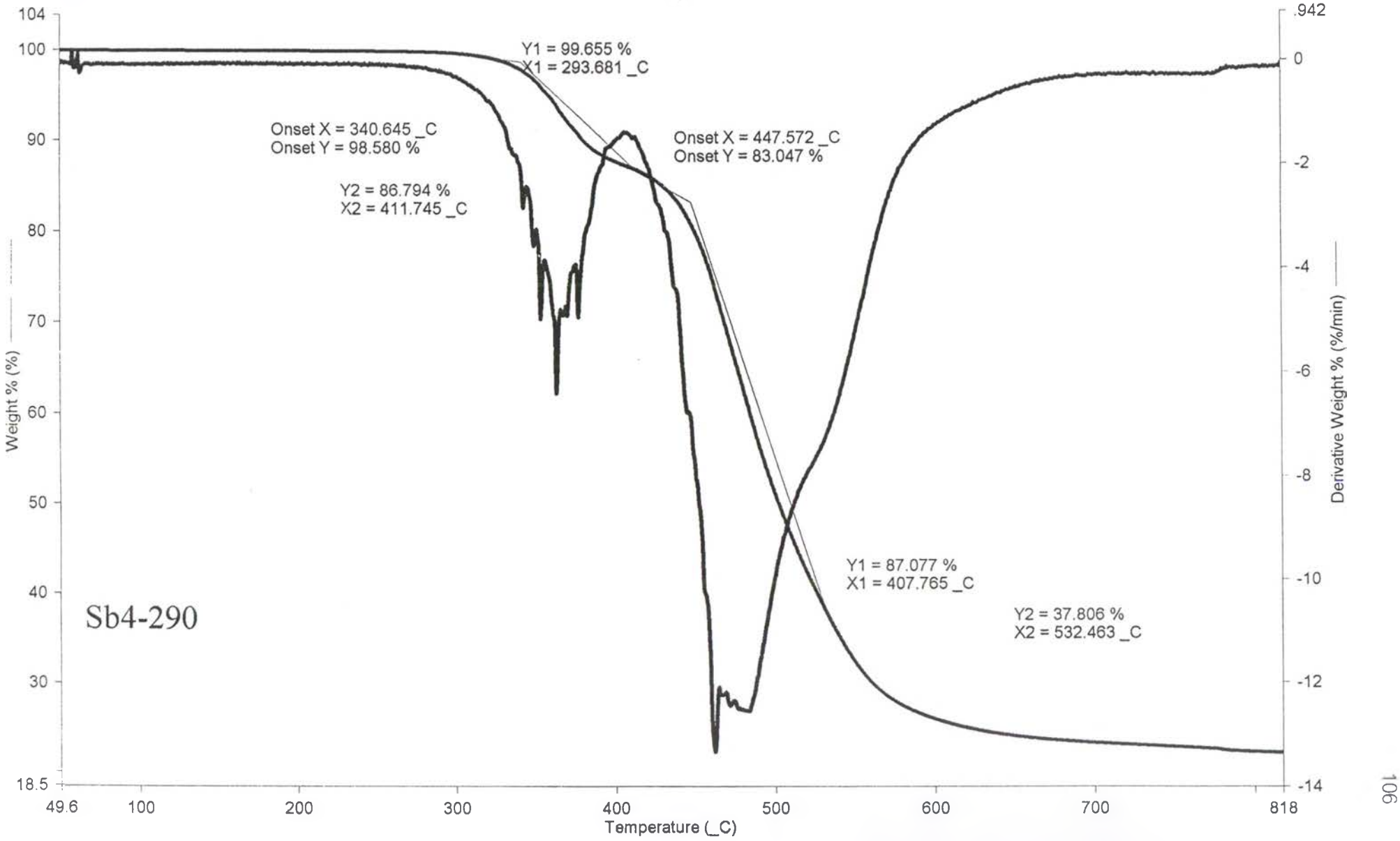
Sb1-290: Sb1-290.tgd
Unsubtracted Weight % (%) : Step: 1
Sb1-290: Sb1-290.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:27:14

Filename:	D:\PE\Pyris\Data\TGAdat...\Sb4-290.tgd
Data Collected:	20/7/44 10:34:40
Operator ID:	
Sample ID:	Sb4-290
Sample Weight:	11.186 mg
Comment:	

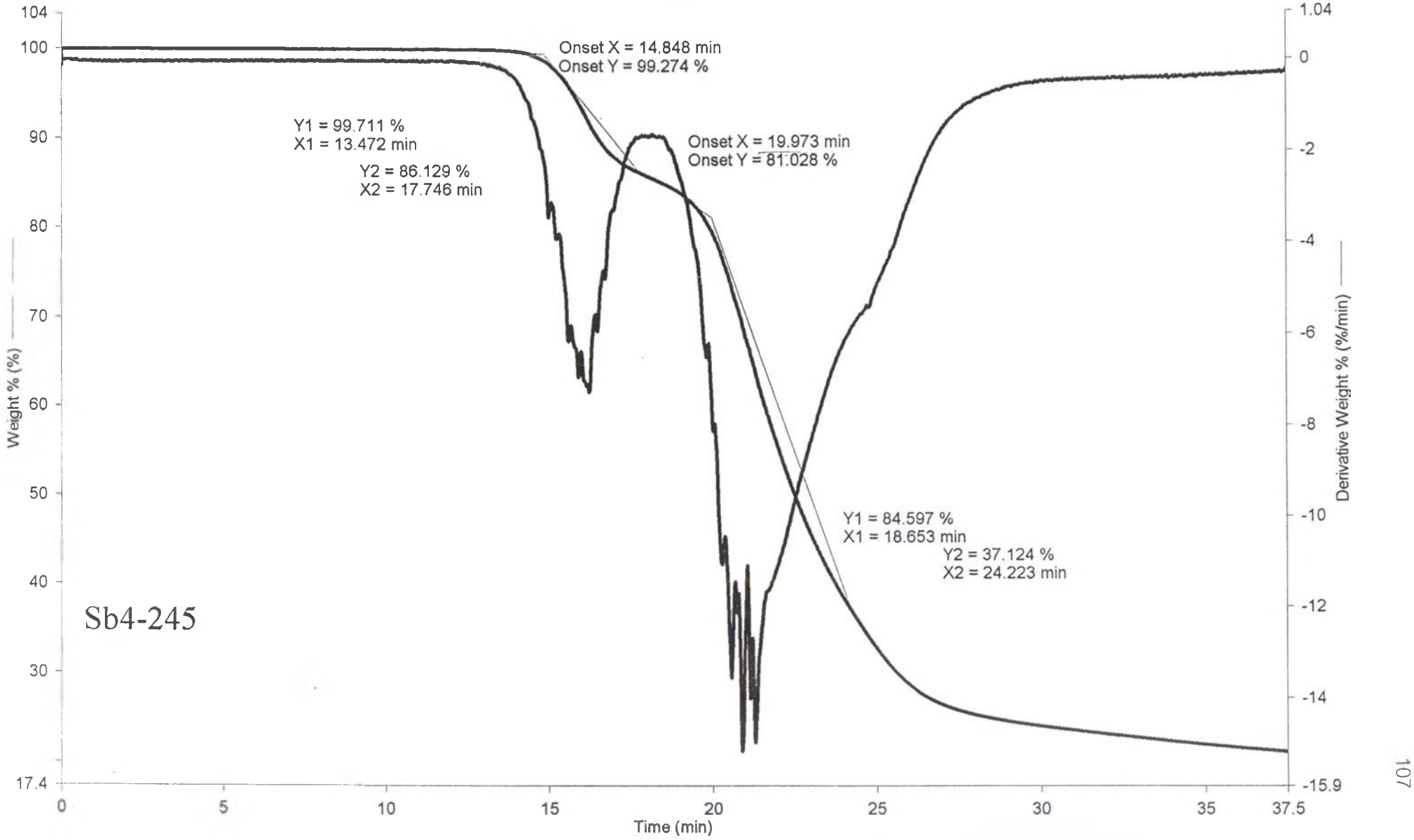
Sb4-290: Sb4-290.tgd
Unsubtracted Weight % (%) : Step: 1
Sb4-290: Sb4-290.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	20/7/44 11:13:30

Filename:	d:\pe\pyris\data\tgadat...\sb4-245.tgd
Data Collected:	20/7/44 9:32:32
Operator ID:	
Sample ID:	Sb4-245
Sample Weight:	10.617 mg
Comment:	

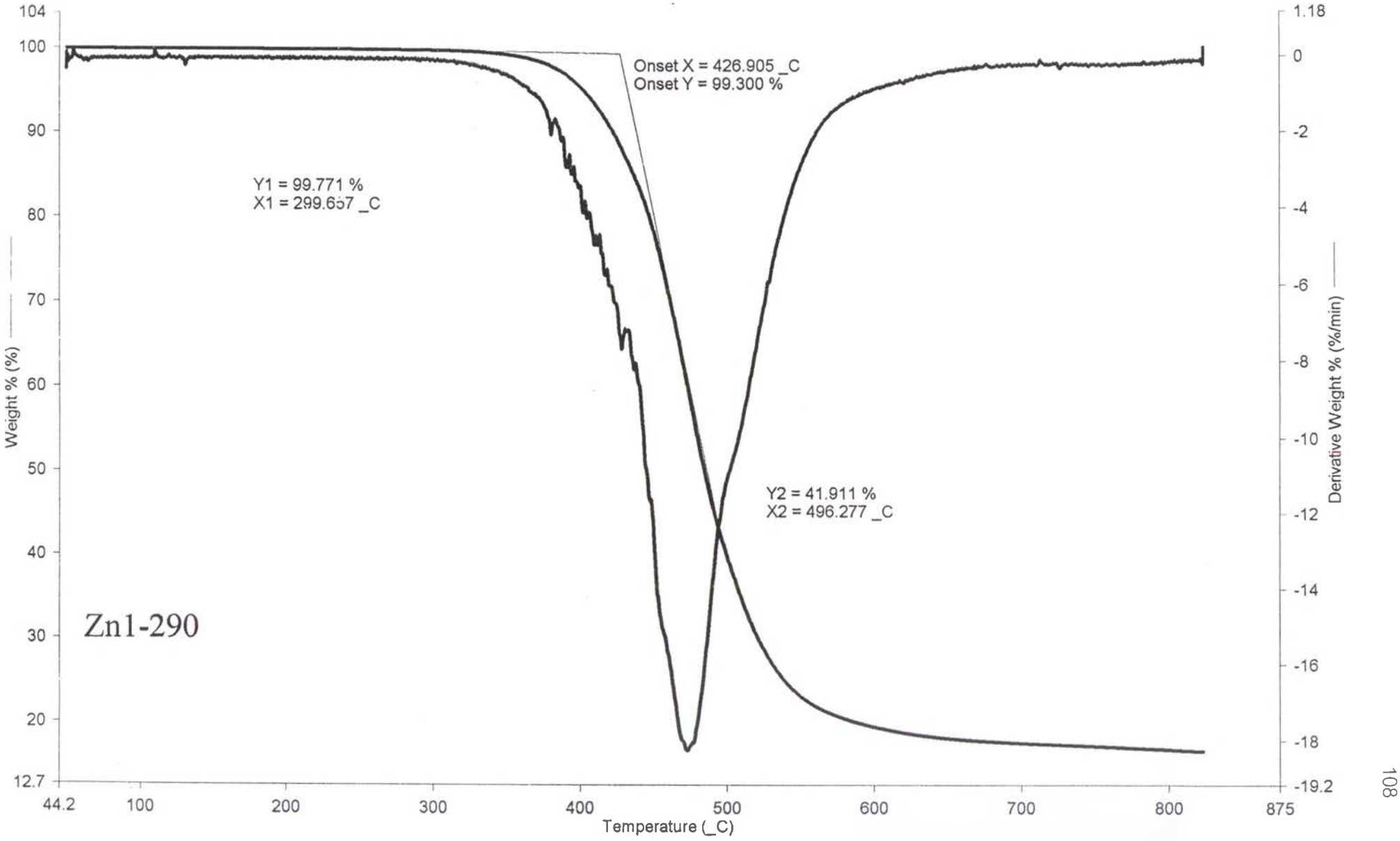
Sb4-245: sb4-245
Unsubtracted Weight % (%) : Step: 1
Sb4-245: sb4-245.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	20/7/44 11:14:55

Filename:	D:\PE\Pyris\Data\TGAdat...\Zn1-290.tgd
Data Collected:	19/7/44 13:45:38
Operator ID:	busarin
Sample ID:	Zn1-290
Sample Weight:	7.535 mg
Comment:	

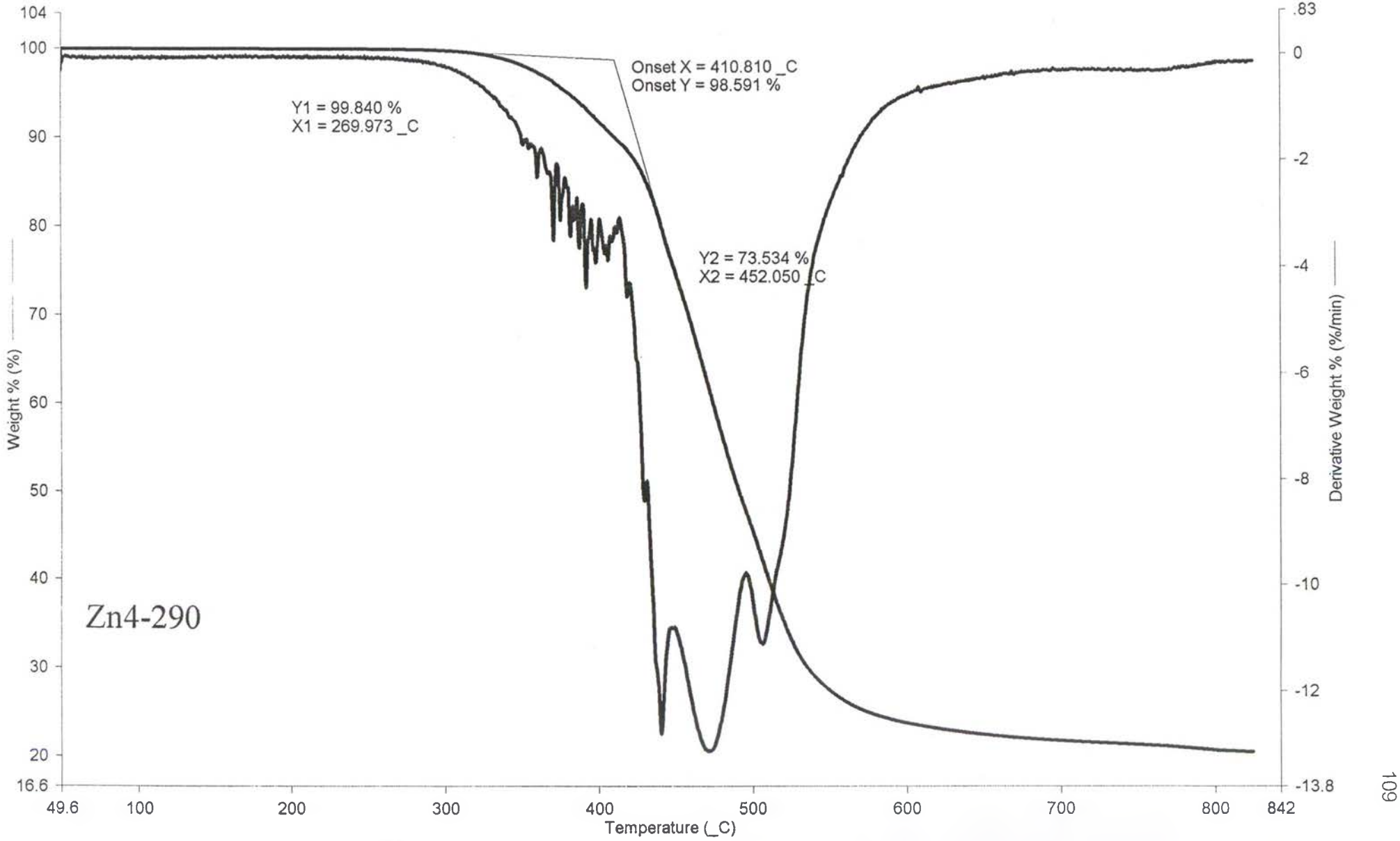
Zn1-290: Zn1-290.tgd
Unsubtracted Weight % (%) : Step: 1
Zn1-290: Zn1-290.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:37:05

Filename:	D:\PE\Pyris\Data\TGAdat...\Zn4-290.tgd
Data Collected:	19/7/44 15:03:13
Operator ID:	busarin
Sample ID:	Zn4-290
Sample Weight:	12.235 mg
Comment:	

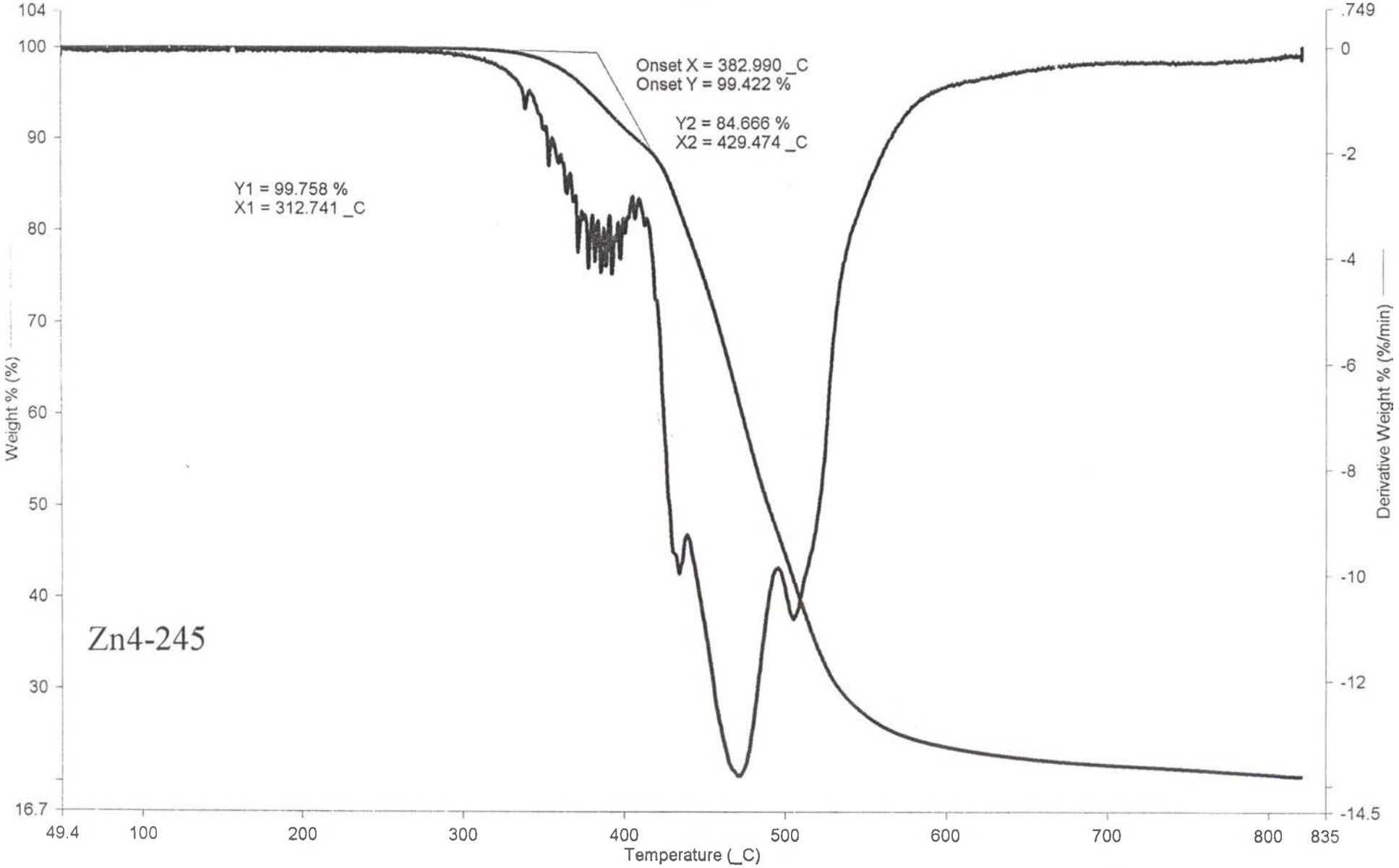
Zn4-290: Zn4-290.tgd
Unsubtracted Weight % (%) : Step: 1
Zn4-290: Zn4-290.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:38:44

Filename:	D:\PE\Pyris\Data\TGAdat...\Zn4-245.tgd
Data Collected:	19/7/44 16:04:33
Operator ID:	busarin
Sample ID:	Zn4-245
Sample Weight:	9.947 mg
Comment:	

Zn4-245: Zn4-245.tgd
Unsubtracted Weight % (%) : Step: 1
Zn4-245: Zn4-245.tgd
Derivative Unsubtracted Weight % (%/min) : Step: 1



1)	Heat from 50.00_C to 800.00_C at 20.00_C/min	19/7/44 17:36:15

ประวัติผู้เขียนวิทยานิพนธ์

นายนิรันดร์ ไทยปรีชา เกิดเมื่อวันที่ 12 กันยายน พ.ศ.2521 สำเร็จการศึกษาระดับประถมศึกษาจากโรงเรียนอำนวยศิลป์ธนบุรีในปีการศึกษา 2532 สำเร็จการศึกษาระดับมัธยมศึกษาตอนต้นจากโรงเรียนวัดราชบพิธในปีการศึกษา 2535 สำเร็จการศึกษาระดับมัธยมศึกษาตอนปลายจากศูนย์การศึกษานอกโรงเรียนกรุงเทพมหานครในปีการศึกษา 2536 สำเร็จการศึกษาระดับปริญญาตรีวิทยาศาสตรบัณฑิต เกียรตินิยมอันดับ 2 สาขาวัสดุศาสตร์ สายวิชาพอลิเมอร์และสิ่งทอ ภาควิชาวัสดุศาสตร์ คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ในปีการศึกษา 2541 และสำเร็จการศึกษาระดับปริญญาโทวิทยาศาสตรมหาบัณฑิต สาขาวิชาวิทยาศาสตร์พอลิเมอร์ประยุกต์และเทคโนโลยีสิ่งทอ ภาควิชาวัสดุศาสตร์ คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ในการศึกษาภาคต้น ปีการศึกษา 2544