BSB Bayerische StaatsBibliothek
Information in erster Linie

Results of contactless and non-invasive analysis: overview

Project: Digitization / Cataloguing of non-textual objects:
Description and Digitization of Precious Book Covers as Independent Works of Art.
Project-Period: 01.10.2014 - 30.09.2017

Shelfmark: Munich, Bayerische Staatsbibliothek, Clm 9476

Analytical methods:

Contact: Institute of Conservation and Restoration (IBR)
of the Bayerische Staatsbibliothek, Munich

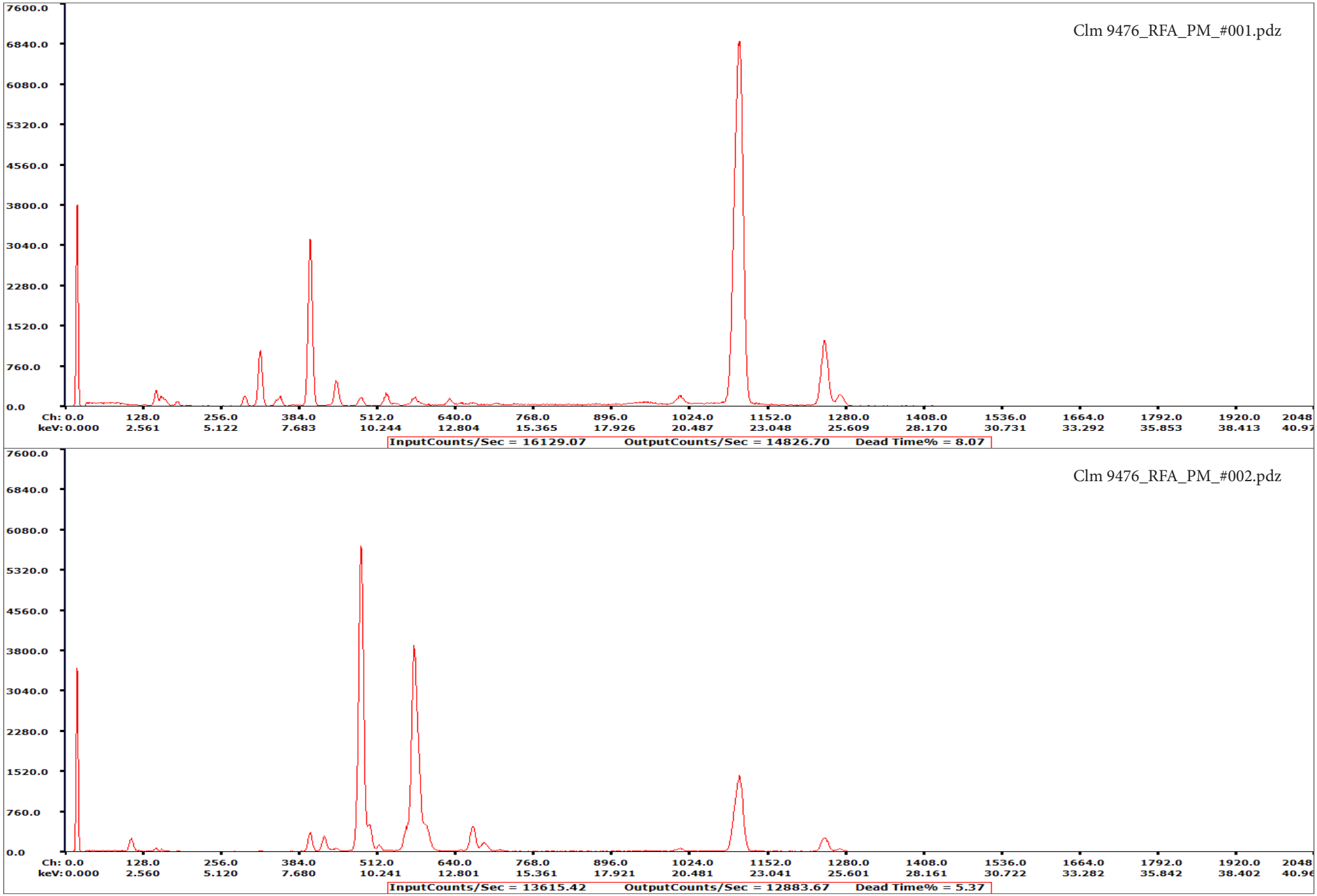
IBR Institut für Bestandserhaltung und Restaurierung

XRF-Analysis:
Mapping of measurement points and spectra
Front Cover

Scanning parameters

Instrument:	Bruker Tracer 5i
Scanning mode:	Precious Metals (PM)
Spot size:	8 mm
Scan duration:	15 s
Scanning mode:	Restricted Materials (RM)
Spot size:	8 mm
Scan duration:	30 s

Spectra:
(filename description: signature_RFA_scanning mode_number of scan.pdz)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keV: 0.000 2.561 5.122 7.683 10.244 12.804 15.365 17.926 20.487 23.048 25.609 28.170 30.731 33.292 35.853 38.413 40.97
InputCounts/Sec = 16129.07 OutputCounts/Sec = 14826.70 Dead Time% = 8.07
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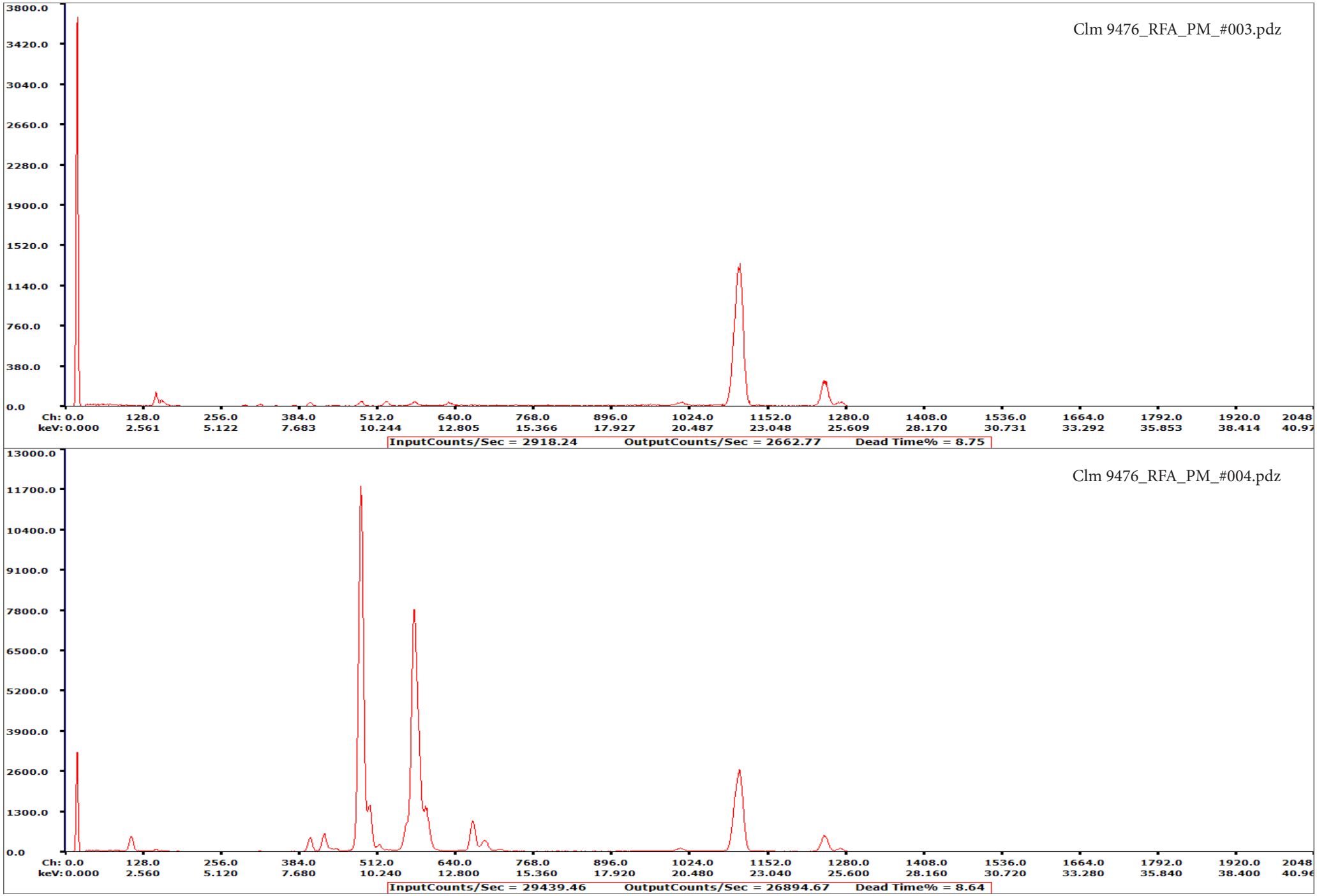
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.241 12.801 15.361 17.921 20.481 23.041 25.601 28.161 30.722 33.282 35.842 38.402 40.96
InputCounts/Sec = 13615.42 OutputCounts/Sec = 12883.67 Dead Time% = 5.37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760.0
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0.0
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keV: 0.000 2.561 5.122 7.683 10.244 12.805 15.366 17.927 20.487 23.048 25.609 28.170 30.731 33.292 35.853 38.414 40.97
InputCounts/Sec = 2918.24 OutputCounts/Sec = 2662.77 Dead Time% = 8.75
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11700.0
10400.0
9100.0
7800.0
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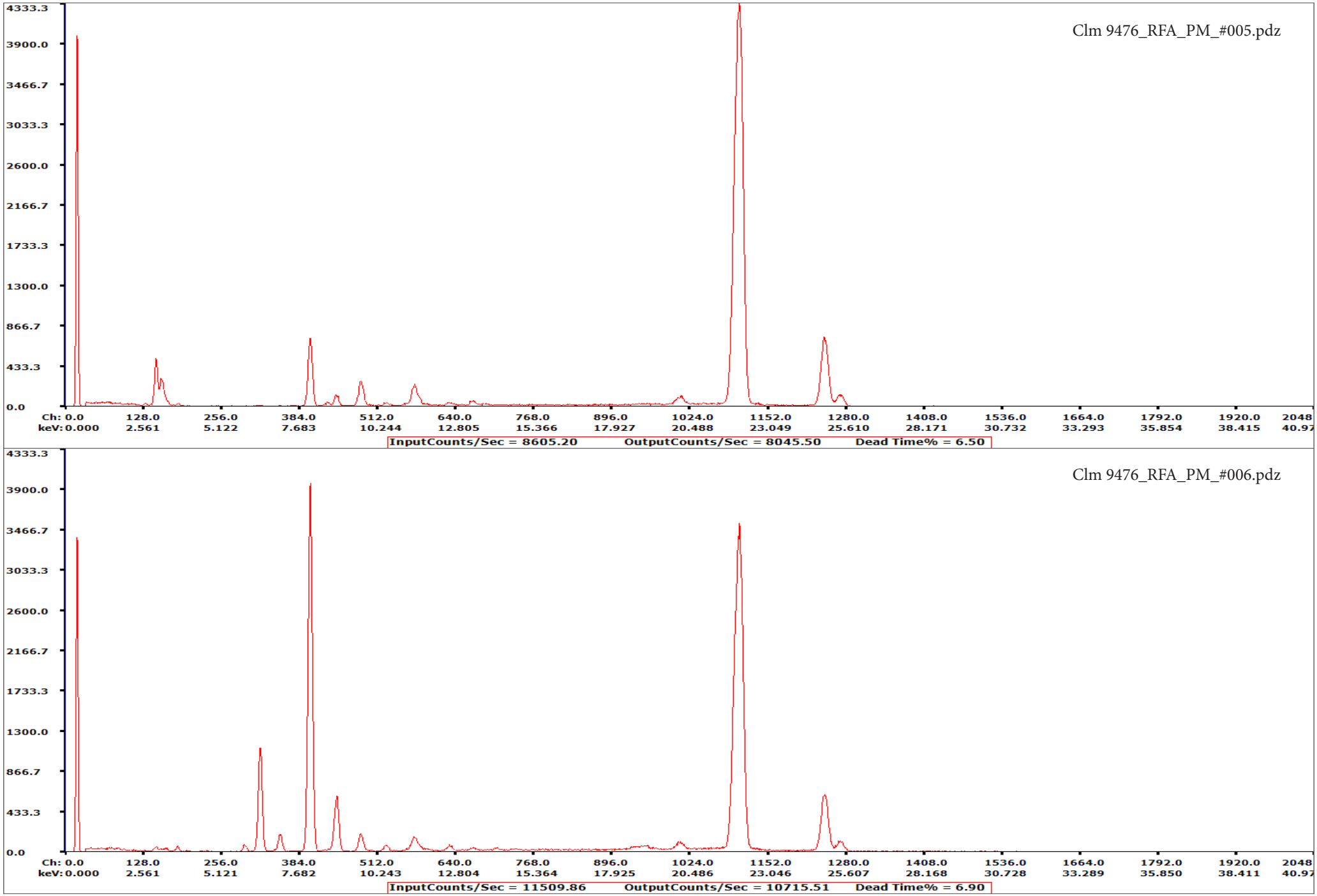
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.480 23.040 25.600 28.160 30.720 33.280 35.840 38.400 40.96
InputCounts/Sec = 29439.46 OutputCounts/Sec = 26894.67 Dead Time% = 8.64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866.7
433.3
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keV: 0.000 2.561 5.122 7.683 10.244 12.805 15.366 17.927 20.488 23.049 25.610 28.171 30.732 33.293 35.854 38.415 40.97
InputCounts/Sec = 8605.20 OutputCounts/Sec = 8045.50 Dead Time% = 6.50
Clm 9476_RFA_PM_#006.pdz
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2166.7
1733.3
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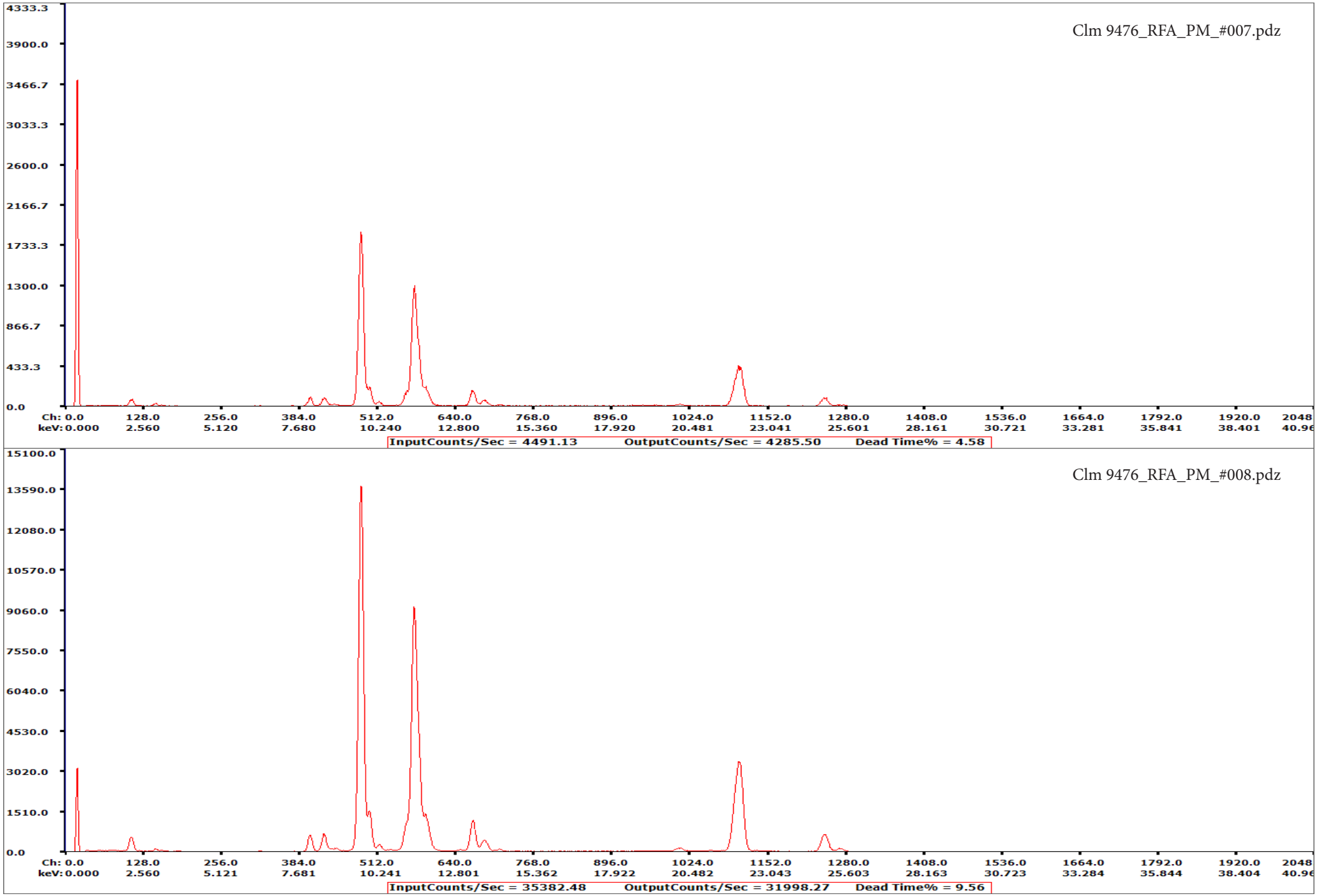
866.7
433.3
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.561 5.121 7.682 10.243 12.804 15.364 17.925 20.486 23.046 25.607 28.168 30.728 33.289 35.850 38.411 40.97
InputCounts/Sec = 11509.86 OutputCounts/Sec = 10715.51 Dead Time% = 6.90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1300.0
866.7
433.3
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.481 23.041 25.601 28.161 30.721 33.281 35.841 38.401 40.96
InputCounts/Sec = 4491.13 OutputCounts/Sec = 4285.50 Dead Time% = 4.58
Clm 9476_RFA_PM_#008.pdz
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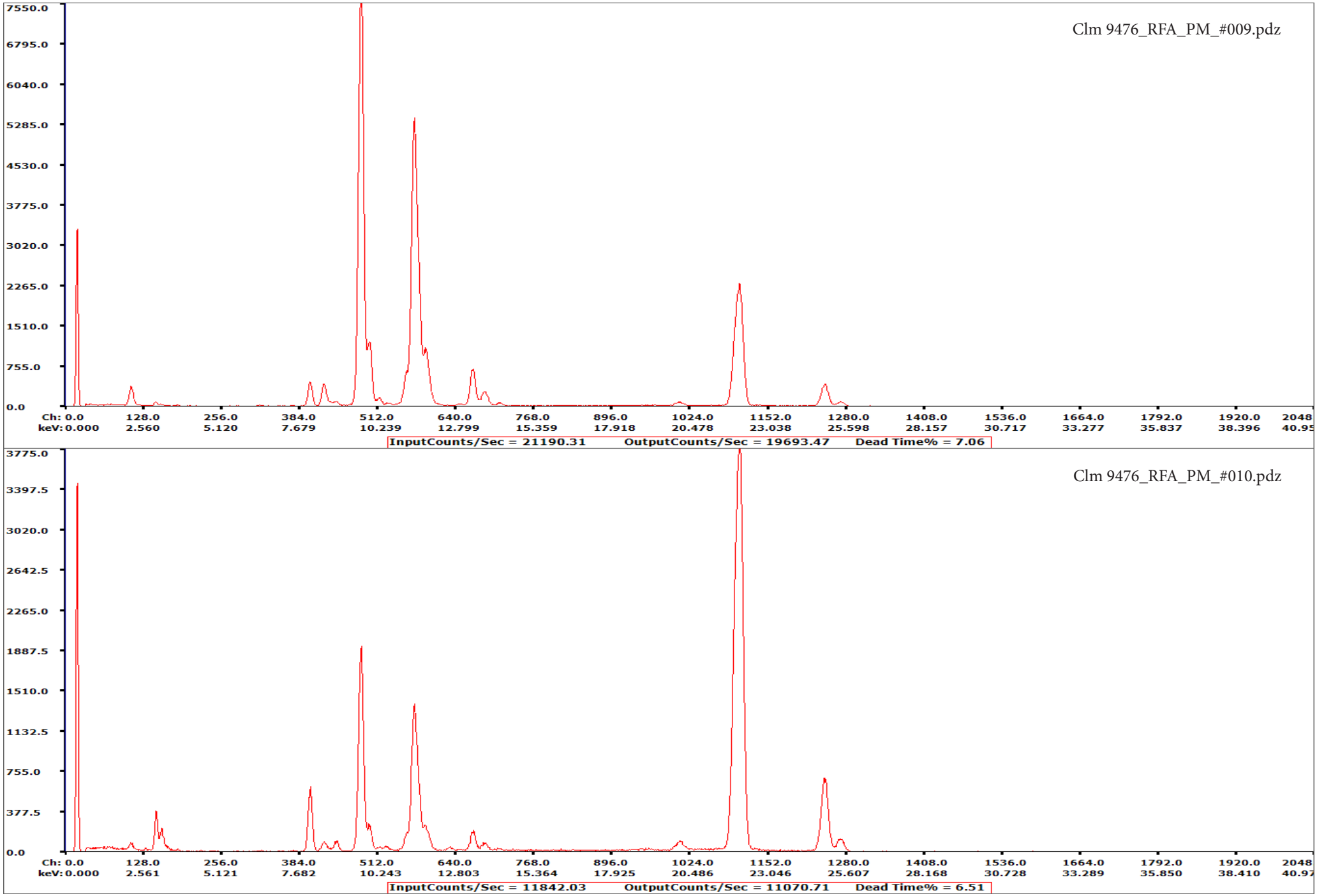
13590.0
12080.0
10570.0
9060.0
7550.0
6040.0
4530.0
3020.0
1510.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.121 7.681 10.241 12.801 15.362 17.922 20.482 23.043 25.603 28.163 30.723 33.284 35.844 38.404 40.96
InputCounts/Sec = 35382.48 OutputCounts/Sec = 31998.27 Dead Time% = 9.56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2265.0
1510.0
755.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.679 10.239 12.799 15.359 17.918 20.478 23.038 25.598 28.157 30.717 33.277 35.837 38.396 40.95
InputCounts/Sec = 21190.31 OutputCounts/Sec = 19693.47 Dead Time% = 7.06
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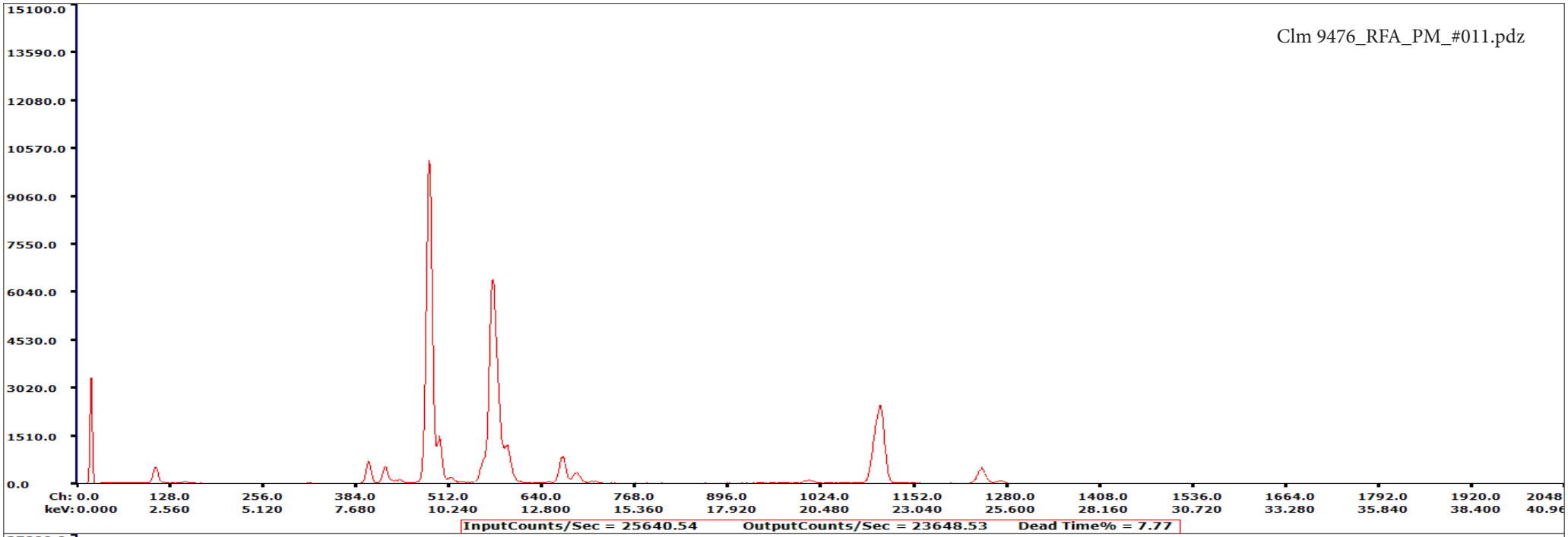
3775.0
3397.5
3020.0
2642.5
2265.0
1887.5
1510.0
1132.5
755.0
377.5
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.561 5.121 7.682 10.243 12.803 15.364 17.925 20.486 23.046 25.607 28.168 30.728 33.289 35.850 38.410 40.97
InputCounts/Sec = 11842.03 OutputCounts/Sec = 11070.71 Dead Time% = 6.51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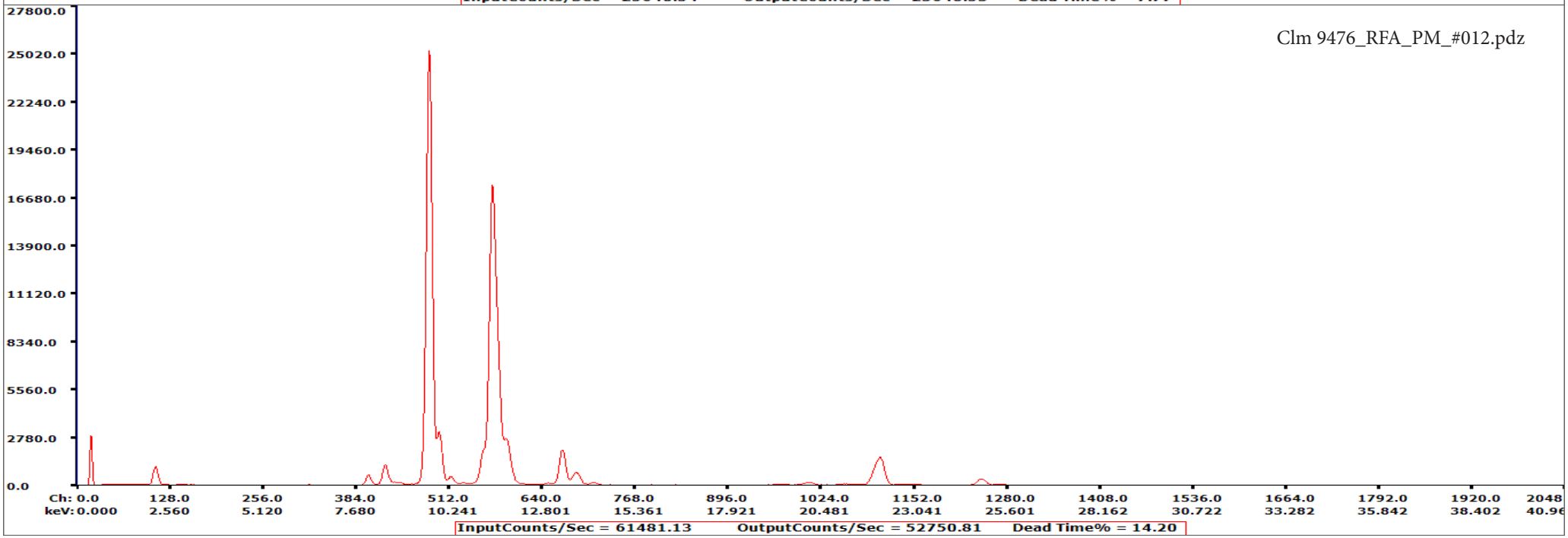
9060.0
7550.0
6040.0
4530.0
3020.0
1510.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.480 23.040 25.600 28.160 30.720 33.280 35.840 38.400 40.96
InputCounts/Sec = 25640.54 OutputCounts/Sec = 23648.53 Dead Time% = 7.77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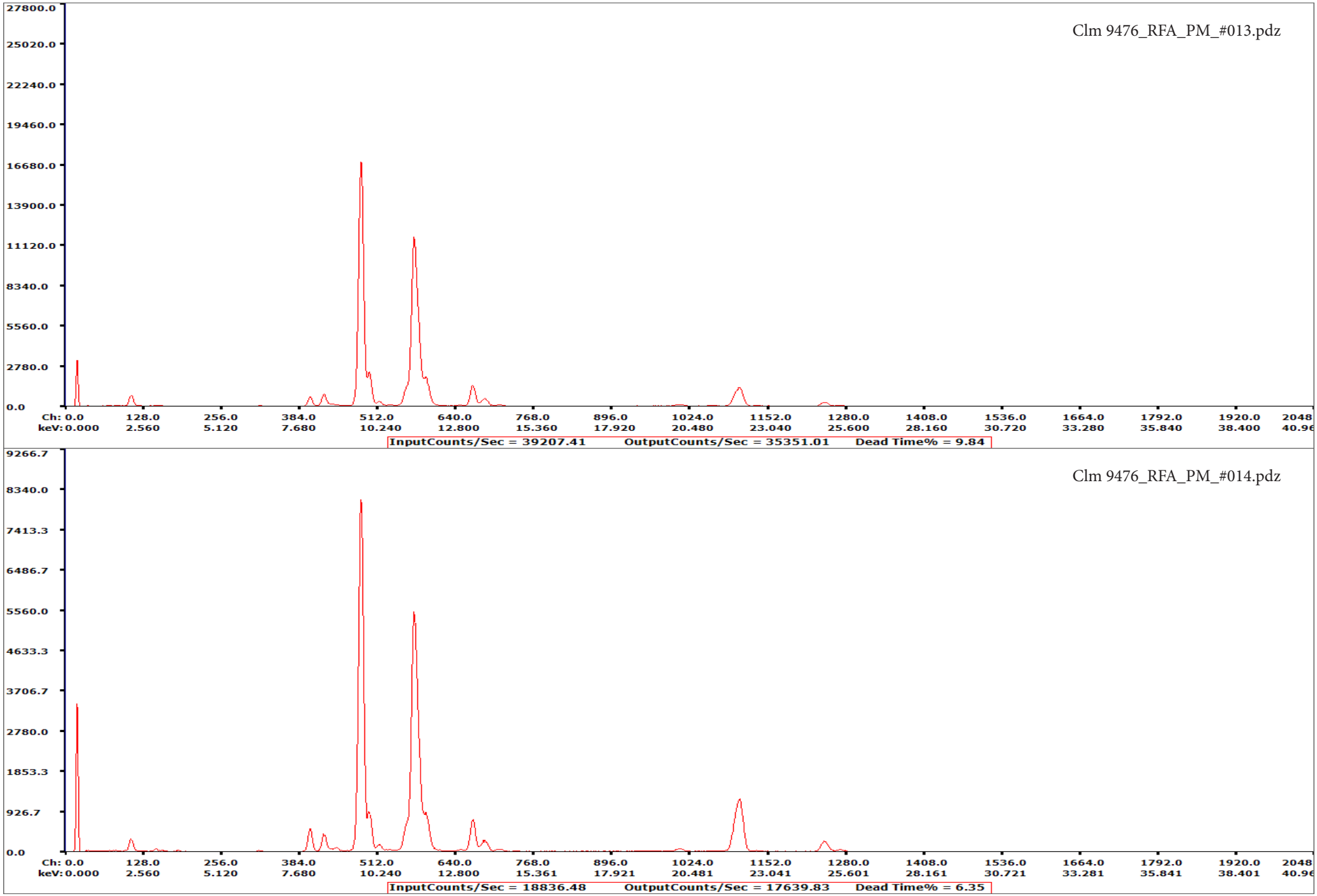
16680.0
13900.0
11120.0
8340.0
5560.0
2780.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.241 12.801 15.361 17.921 20.481 23.041 25.601 28.162 30.722 33.282 35.842 38.402 40.96
InputCounts/Sec = 61481.13 OutputCounts/Sec = 52750.81 Dead Time% = 14.20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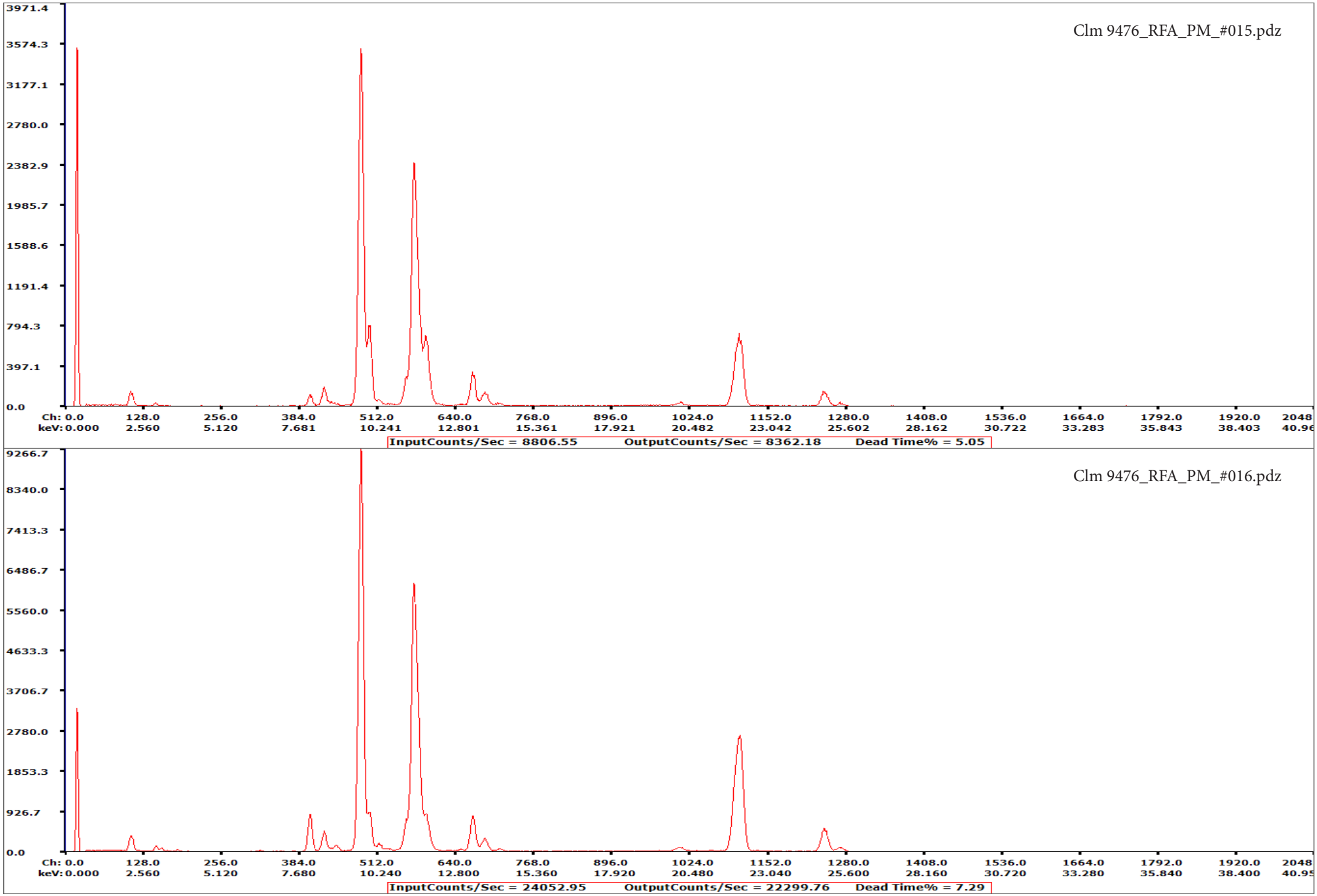
22240.0
19460.0
16680.0
13900.0
11120.0
8340.0
5560.0
2780.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.480 23.040 25.600 28.160 30.720 33.280 35.840 38.400 40.96
InputCounts/Sec = 39207.41 OutputCounts/Sec = 35351.01 Dead Time% = 9.84
Clm 9476_RFA_PM_#014.pdz
9266.7
8340.0
7413.3
6486.7
5560.0
4633.3
3706.7
2780.0
1853.3
926.7
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.361 17.921 20.481 23.041 25.601 28.161 30.721 33.281 35.841 38.401 40.96
InputCounts/Sec = 18836.48 OutputCounts/Sec = 17639.83 Dead Time% = 6.35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3177.1
2780.0
2382.9
1985.7
1588.6
1191.4
794.3
397.1
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.681 10.241 12.801 15.361 17.921 20.482 23.042 25.602 28.162 30.722 33.283 35.843 38.403 40.96
InputCounts/Sec = 8806.55 OutputCounts/Sec = 8362.18 Dead Time% = 5.05
Clm 9476_RFA_PM_#016.pdz
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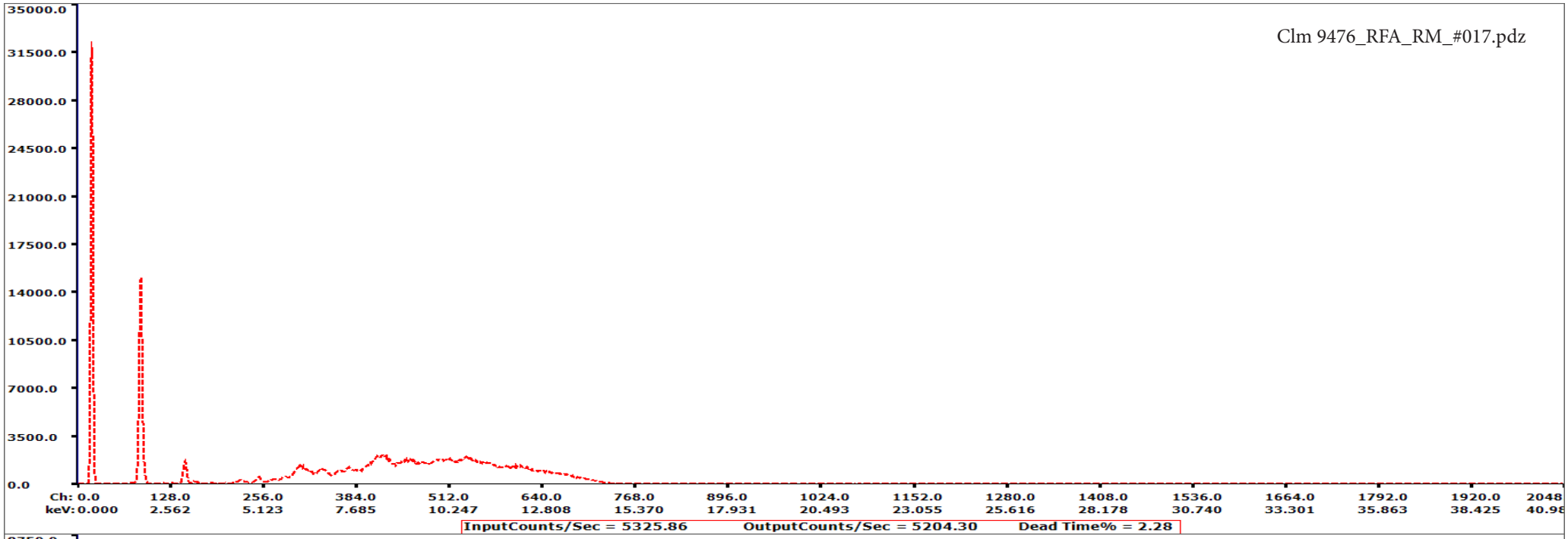
8340.0
7413.3
6486.7
5560.0
4633.3
3706.7
2780.0
1853.3
926.7
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.480 23.040 25.600 28.160 30.720 33.280 35.840 38.400 40.95
InputCounts/Sec = 24052.95 OutputCounts/Sec = 22299.76 Dead Time% = 7.29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17500.0
14000.0
10500.0
7000.0
3500.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.562 5.123 7.685 10.247 12.808 15.370 17.931 20.493 23.055 25.616 28.178 30.740 33.301 35.863 38.425 40.98
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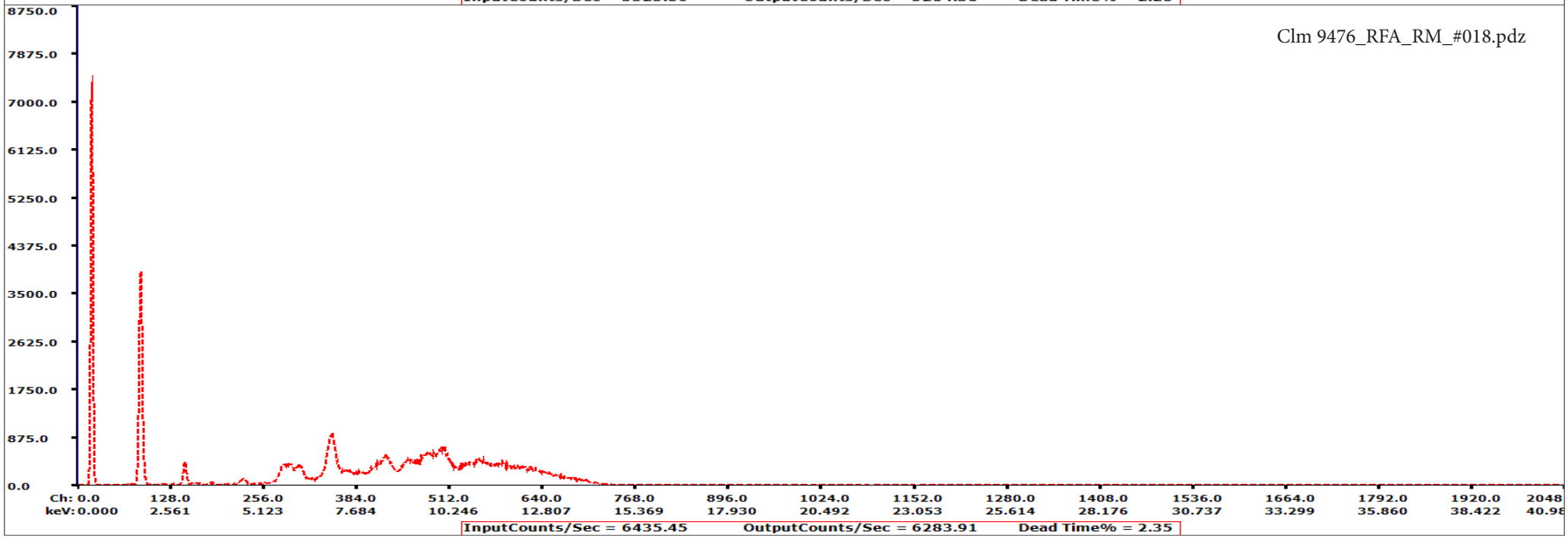
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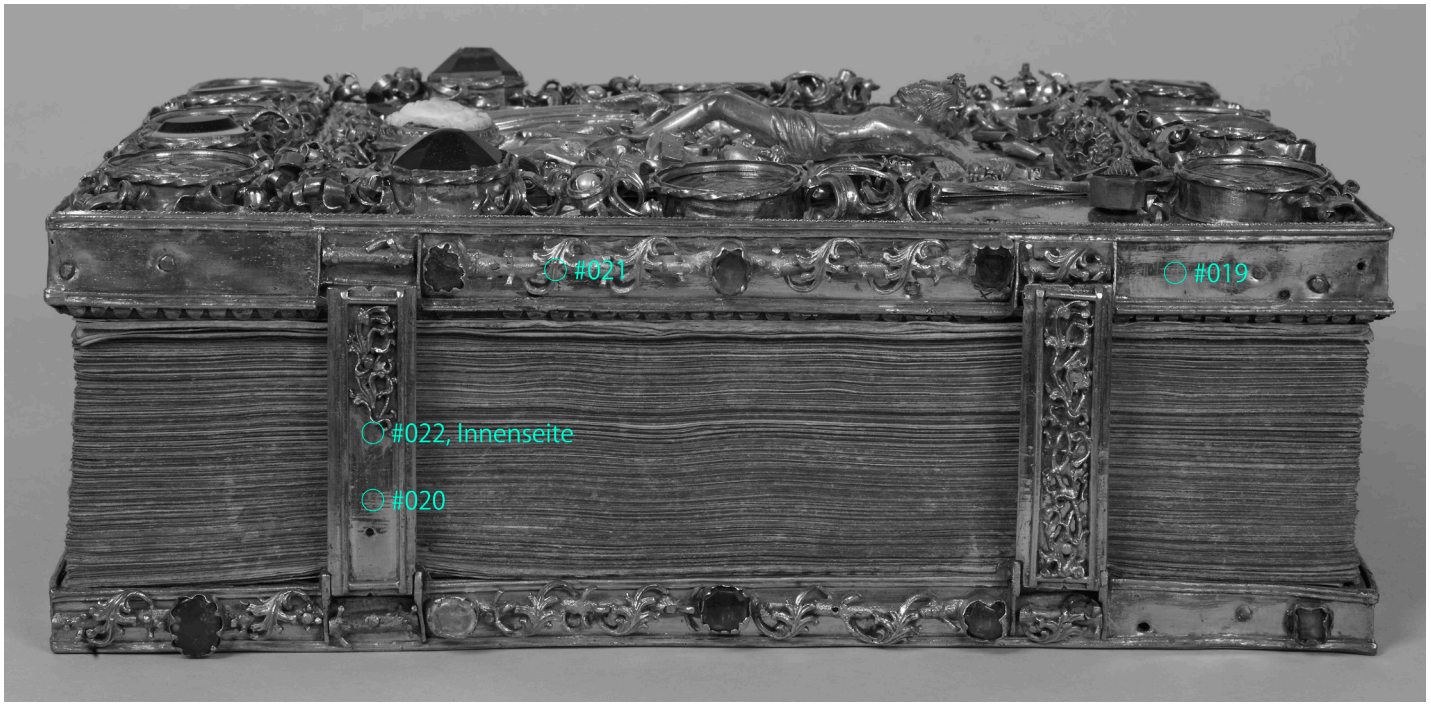
2625.0
1750.0
875.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.561 5.123 7.684 10.246 12.807 15.369 17.930 20.492 23.053 25.614 28.176 30.737 33.299 35.860 38.422 40.98
InputCounts/Sec = 6435.45 OutputCounts/Sec = 6283.91 Dead Time% = 2.35

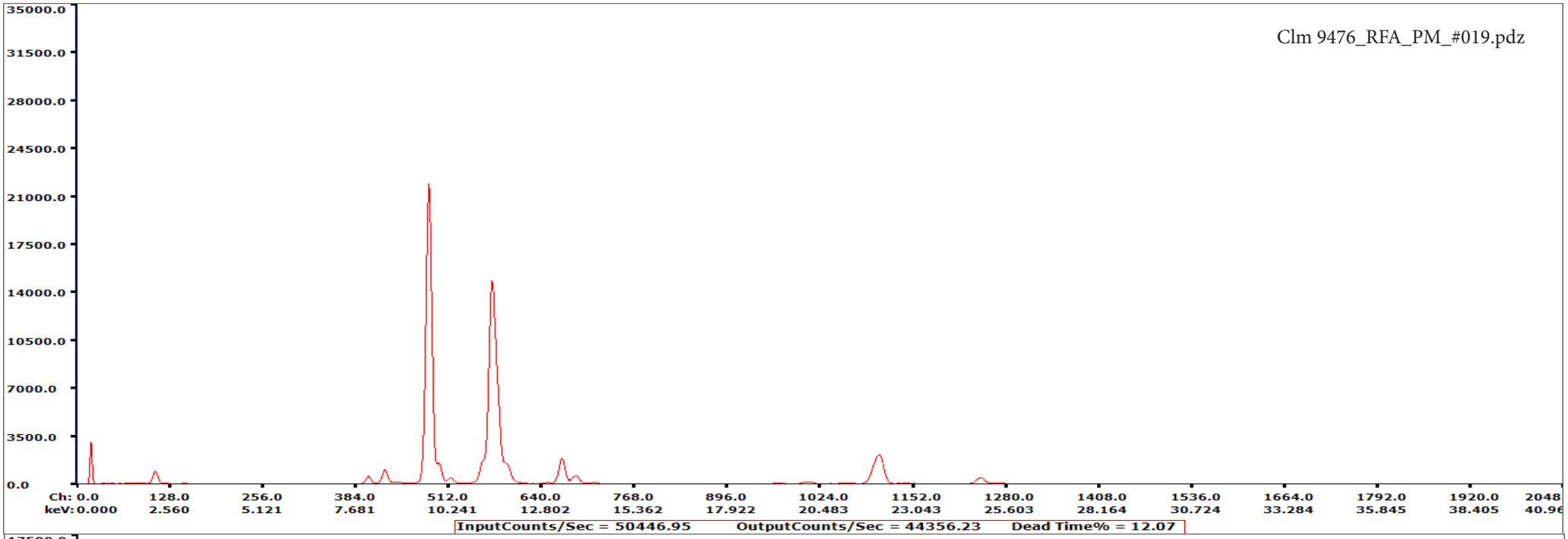
XRF-Analysis:
Mapping of measurement points and spectra
Fore edge

Scanning parameters

Instrument:	Bruker Tracer 5i
Scanning mode:	Precious Metals (PM)
Spot size:	8 mm
Scan duration:	15 s

Spectra: (filename description: signature_RFA_scanning mode_number of scan.pdz)

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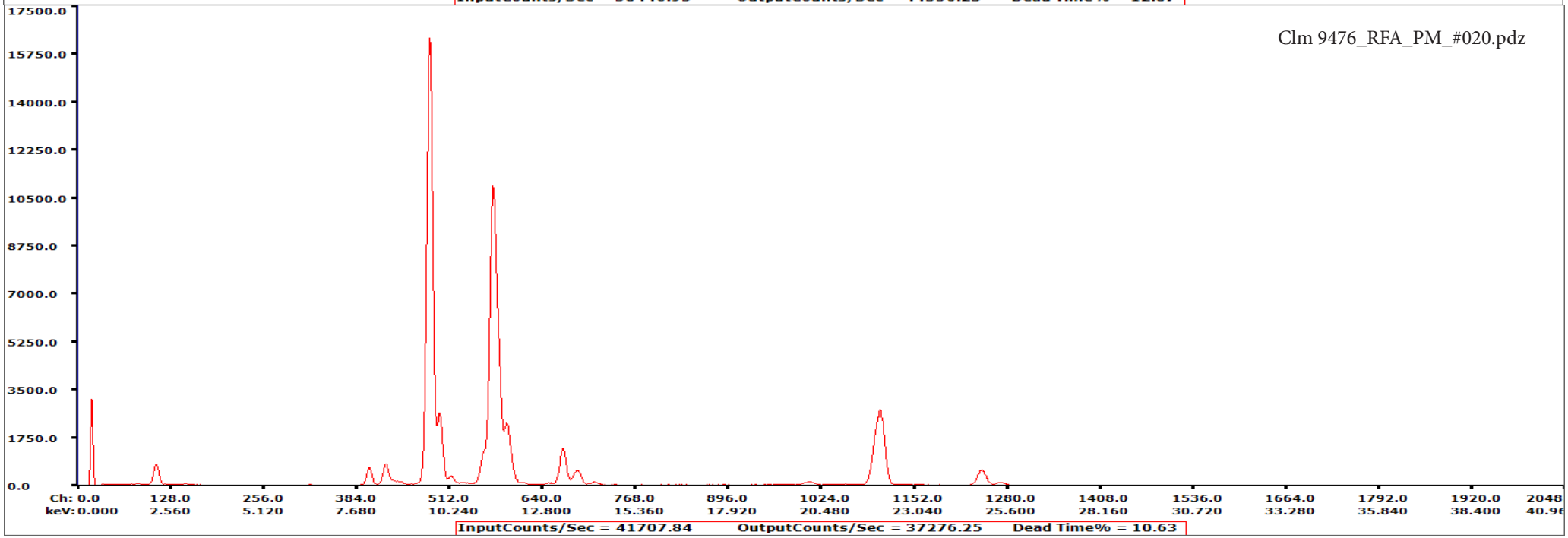
10500.0
7000.0
3500.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.121 7.681 10.241 12.802 15.362 17.922 20.483 23.043 25.603 28.164 30.724 33.284 35.845 38.405 40.96
InputCounts/Sec = 50446.95 OutputCounts/Sec = 44356.23 Dead Time% = 12.07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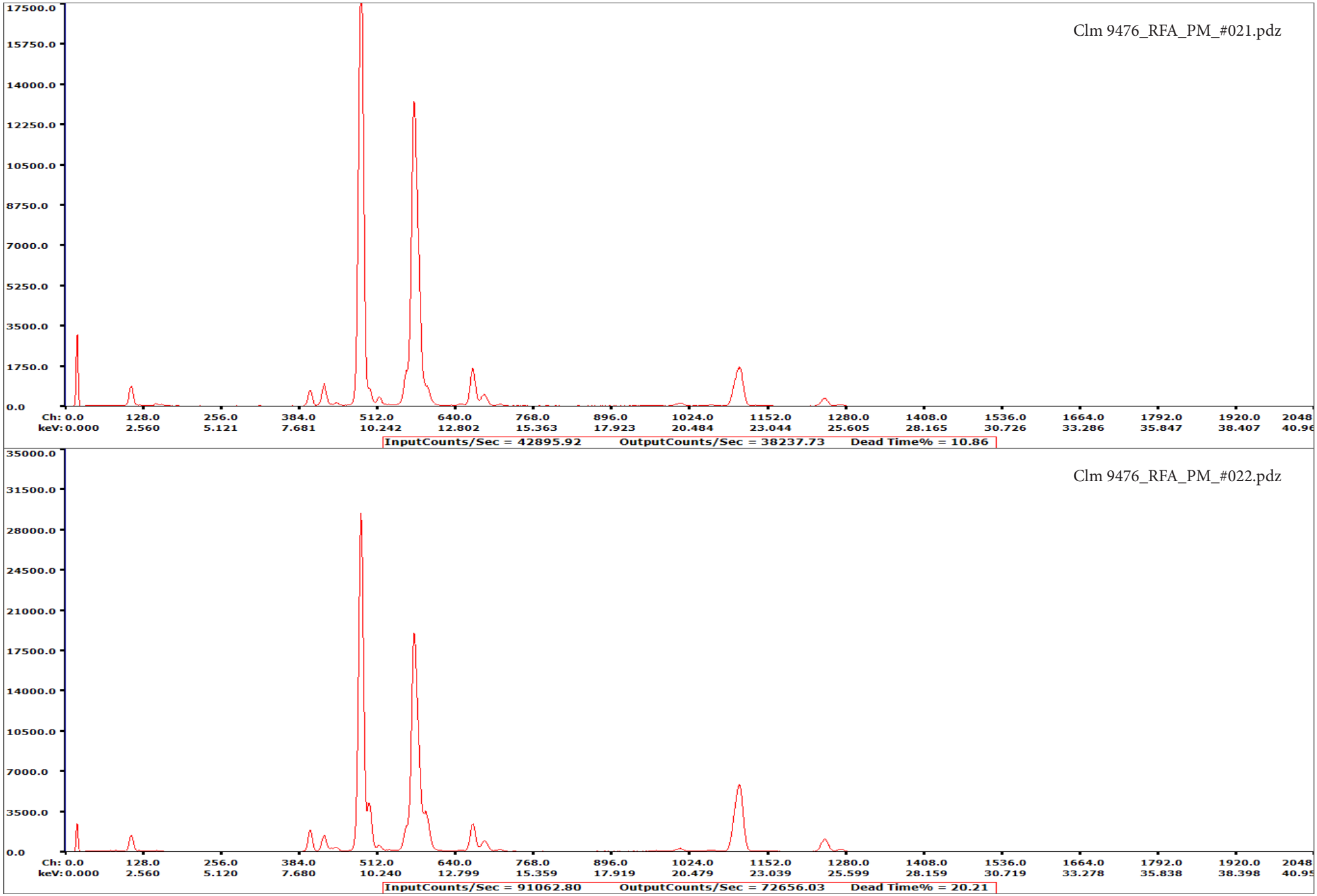
3500.0
1750.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.800 15.360 17.920 20.480 23.040 25.600 28.160 30.720 33.280 35.840 38.400 40.96
InputCounts/Sec = 41707.84 OutputCounts/Sec = 37276.25 Dead Time% = 10.63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8750.0
7000.0
5250.0
3500.0
1750.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.121 7.681 10.242 12.802 15.363 17.923 20.484 23.044 25.605 28.165 30.726 33.286 35.847 38.407 40.96
InputCounts/Sec = 42895.92 OutputCounts/Sec = 38237.73 Dead Time% = 10.86
Clm 9476_RFA_PM_#022.pdz
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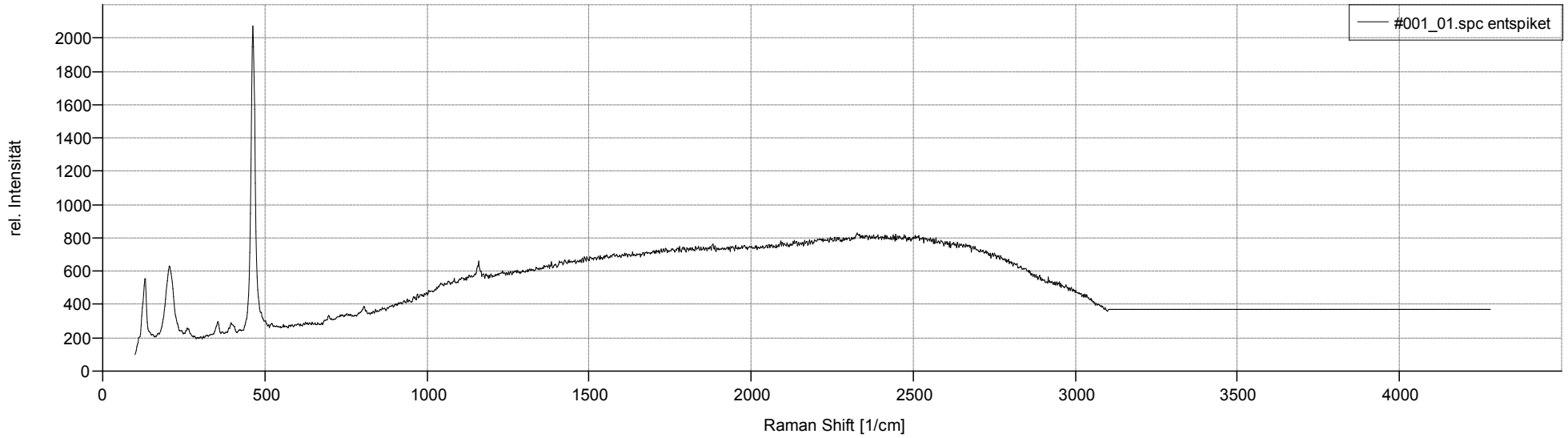
31500.0
28000.0
24500.0
21000.0
17500.0
14000.0
10500.0
7000.0
3500.0
0.0
Ch: 0.0 128.0 256.0 384.0 512.0 640.0 768.0 896.0 1024.0 1152.0 1280.0 1408.0 1536.0 1664.0 1792.0 1920.0 2048
keV: 0.000 2.560 5.120 7.680 10.240 12.799 15.359 17.919 20.479 23.039 25.599 28.159 30.719 33.278 35.838 38.398 40.95
InputCounts/Sec = 91062.80 OutputCounts/Sec = 72656.03 Dead Time% = 20.21

Raman-Analysis:
Mapping of measurement points and spectra
Front cover

Scanning parameters

Instrument:	Enwave Optronics, ProRaman-L
Scanning mode:	dispersive mode
Laser:	532 nm, max. 50 mW
Spectral resolution:	7 cm^{-1}
Spectral range:	100-3100 cm^{-1}

Spectra:
(filename description: #number of scan.dx)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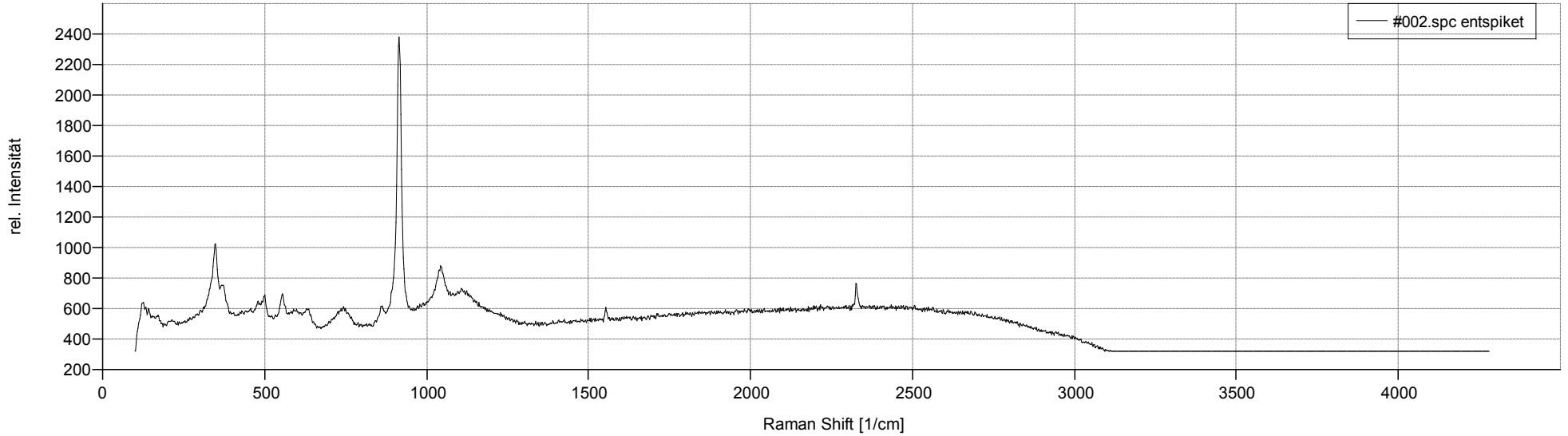
rel. Intensität
Raman Shift [1/cm]
0
200
400
600
800
1000
1200
1400
1600
1800
2000
0
500
1000
1500
2000
2500
3000
3500
4000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rel. Intensität
Raman Shift [1/cm]
200
400
600
800
1000
1200
1400
1600
1800
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2200
2400
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1000
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2000
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3000
3500
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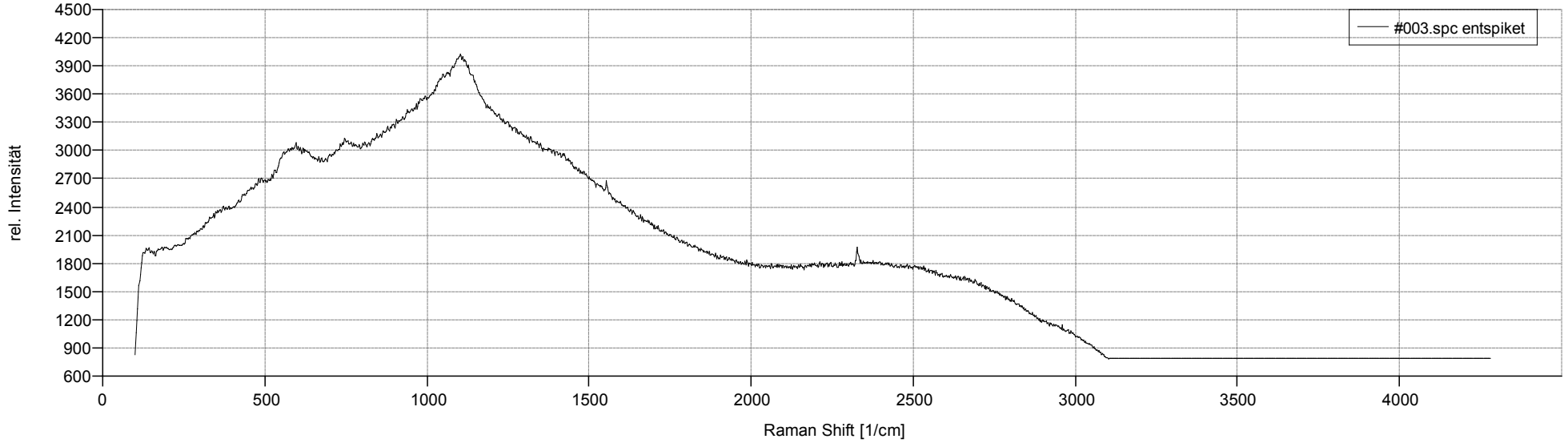
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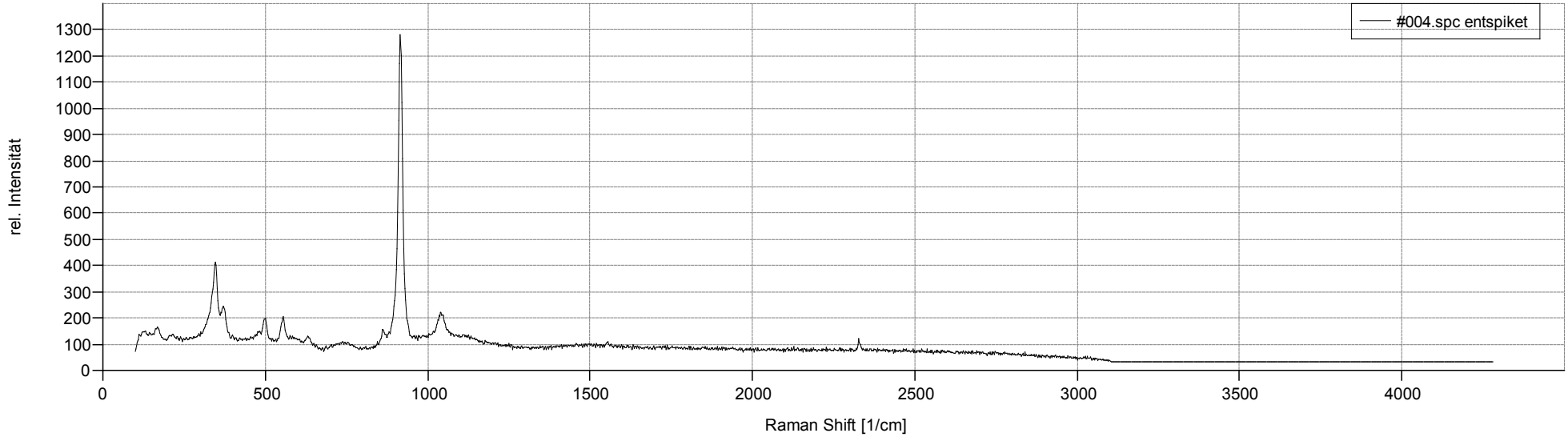
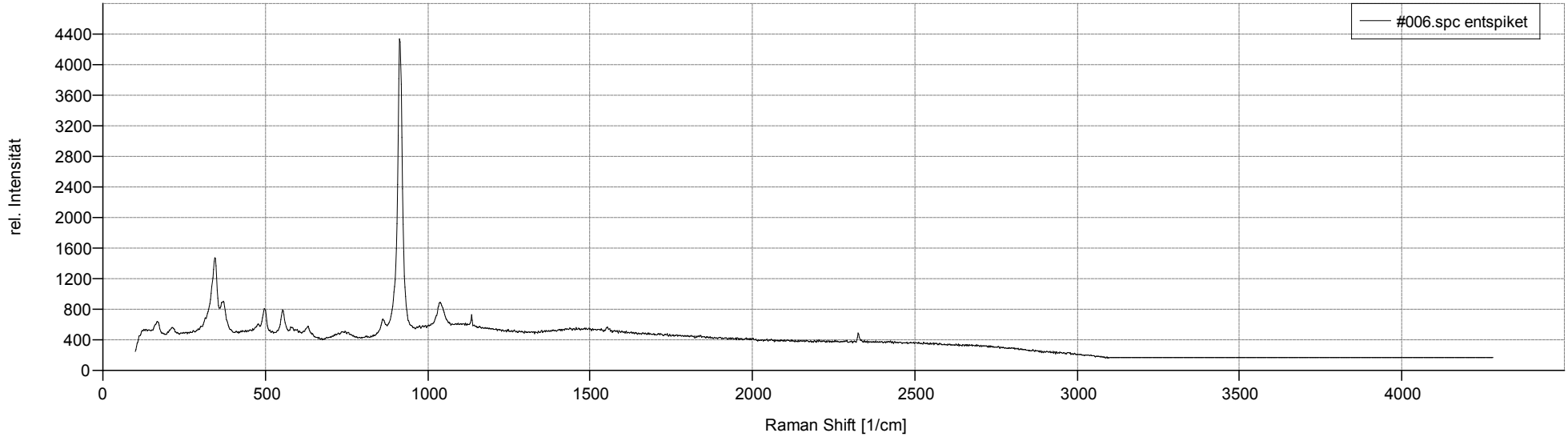
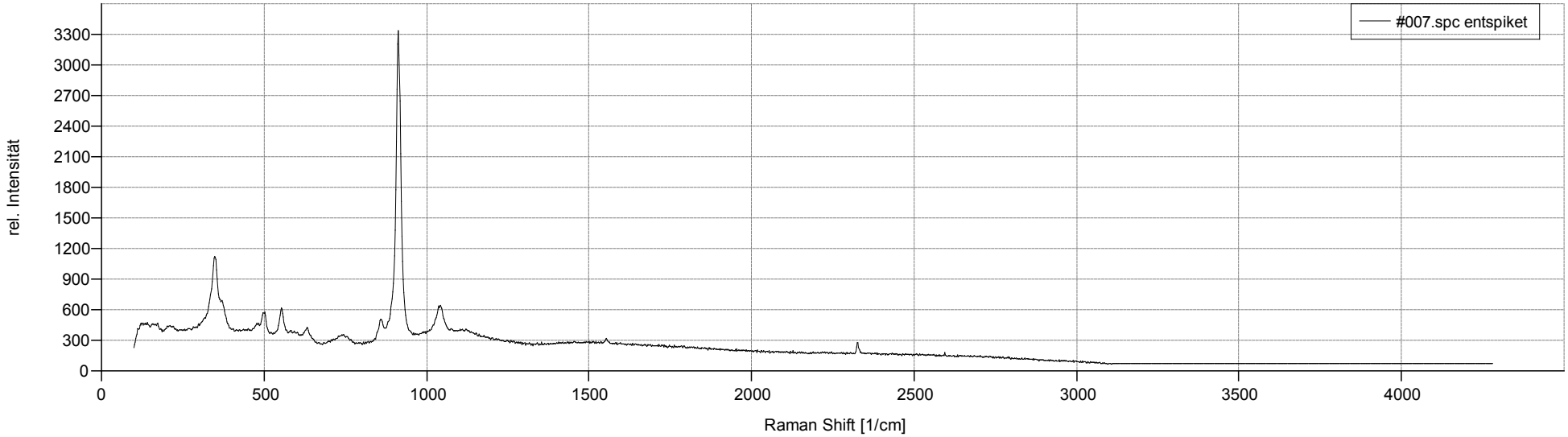
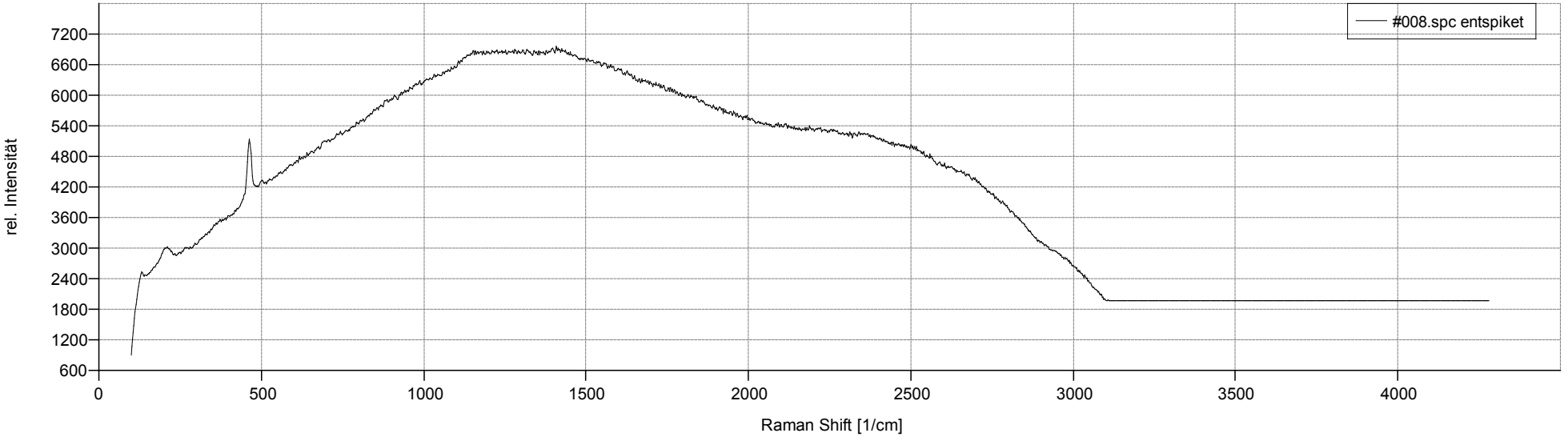
rel. Intensität
4500
4200
3900
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

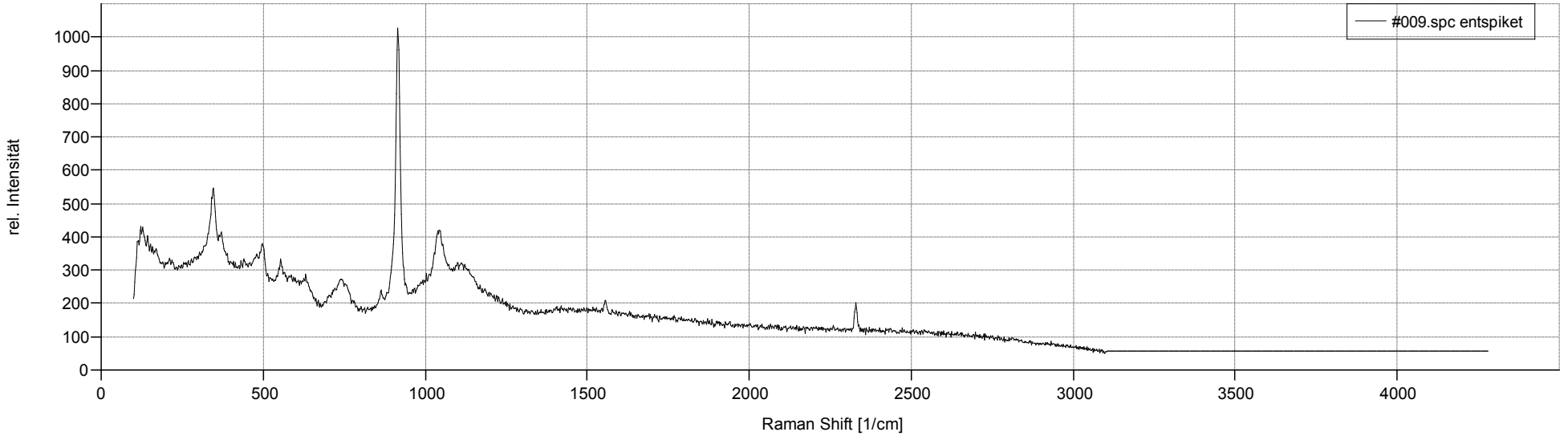

#004.spc entspiket
rel. Intensität
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

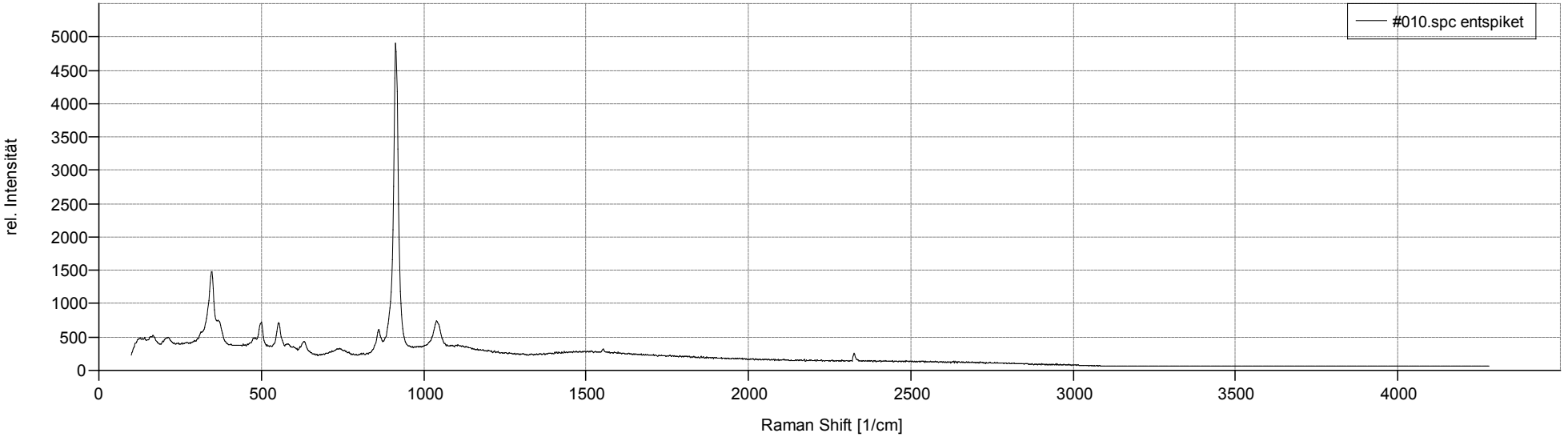

#005.spc entspiket
rel. Intensität
Raman Shift [1/cm]
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
0
500
1000
1500
2000
2500
3000
3500
4000

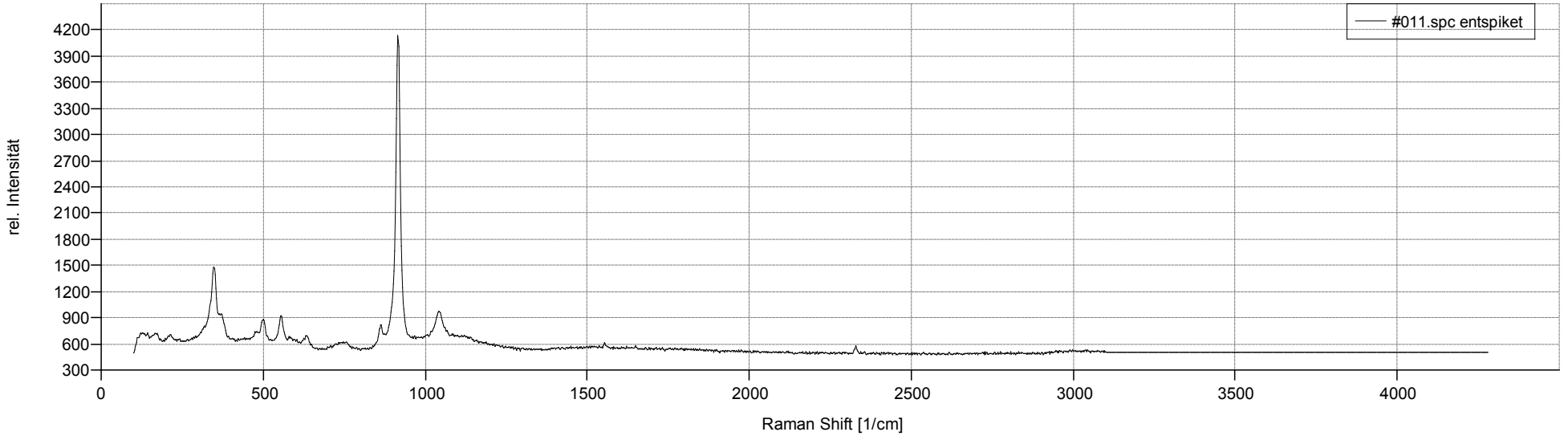

#006.spc entspiket
rel. Intensität
Raman Shift [1/cm]
4400
4000
3600
3200
2800
2400
2000
1600
1200
800
400
0
500
1000
1500
2000
2500
3000
3500
4000

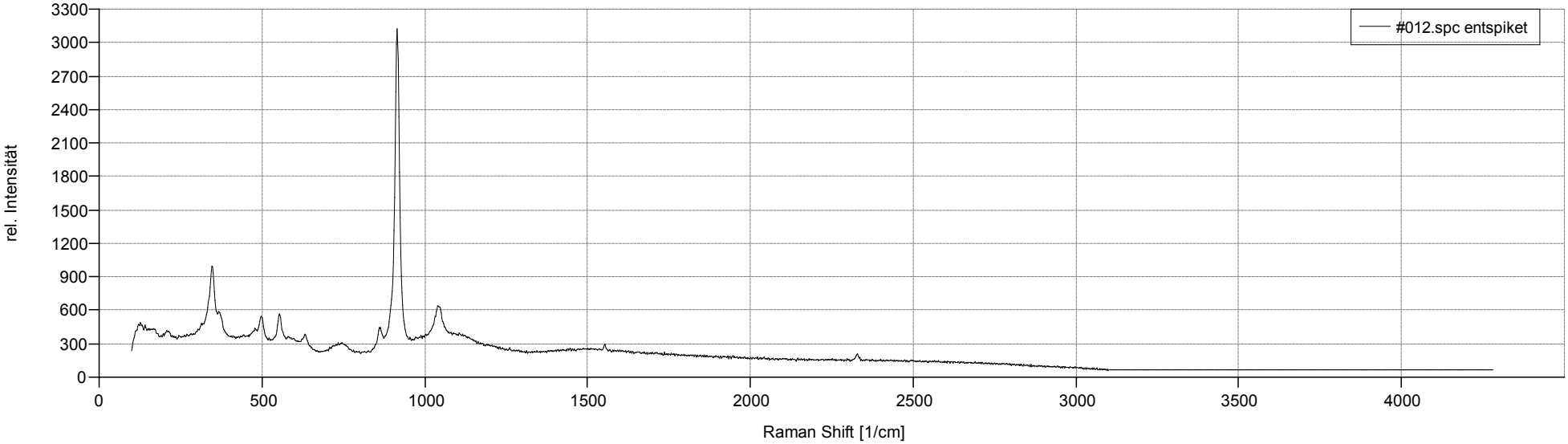

#007.spc entspiket
rel. Intensität
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

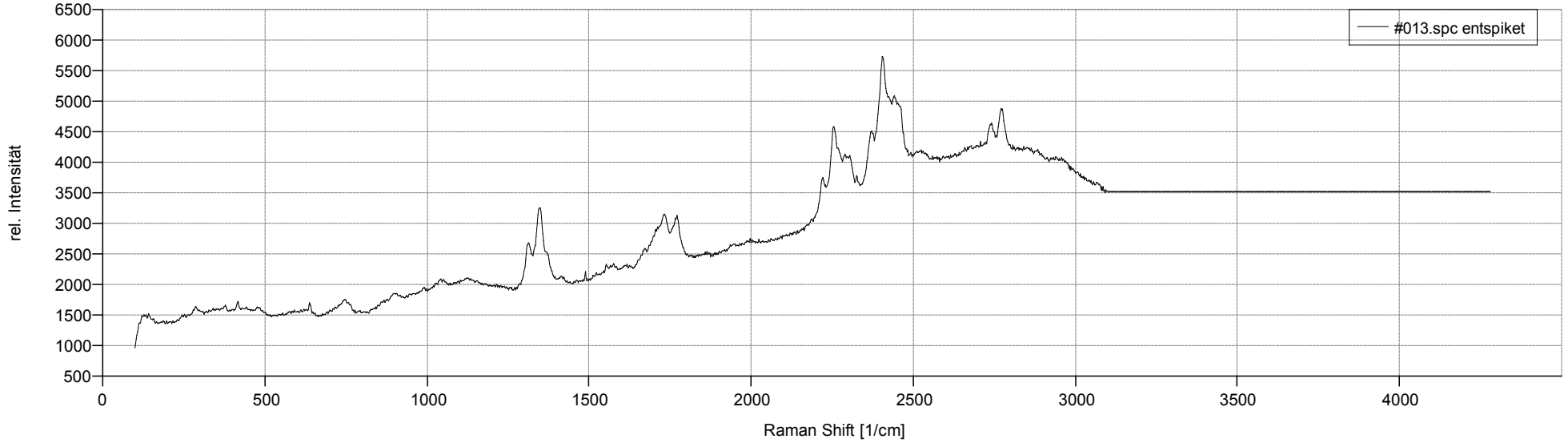

#008.spc entspiket
rel. Intensität
7200
6600
6000
5400
4800
4200
3600
3000
2400
1800
1200
600
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

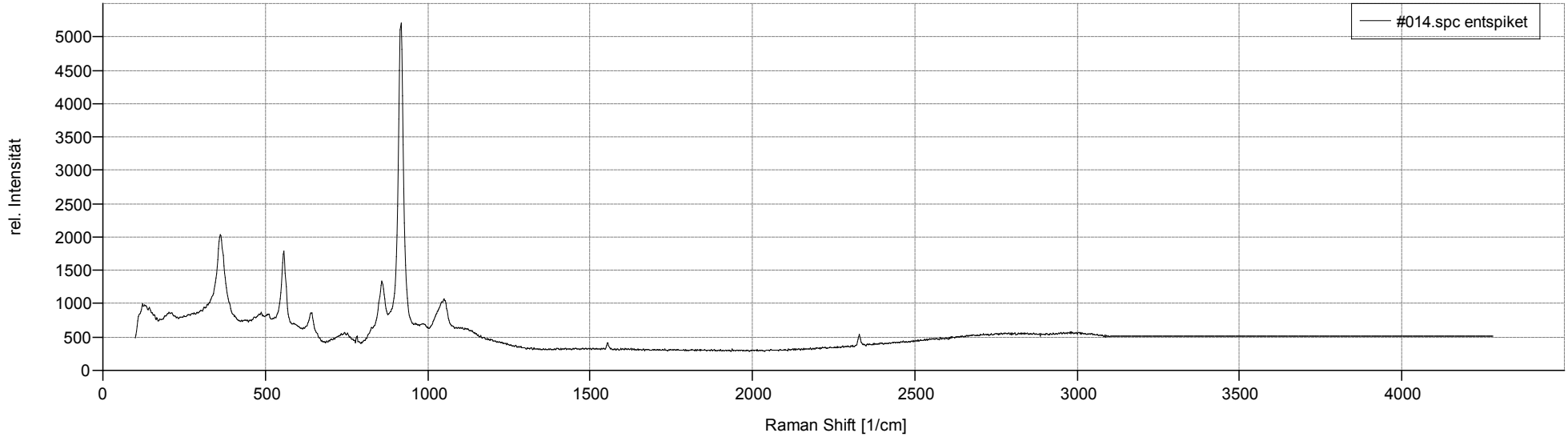

#009.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
100
200
300
400
500
600
700
800
900
1000
0
500
1000
1500
2000
2500
3000
3500
4000

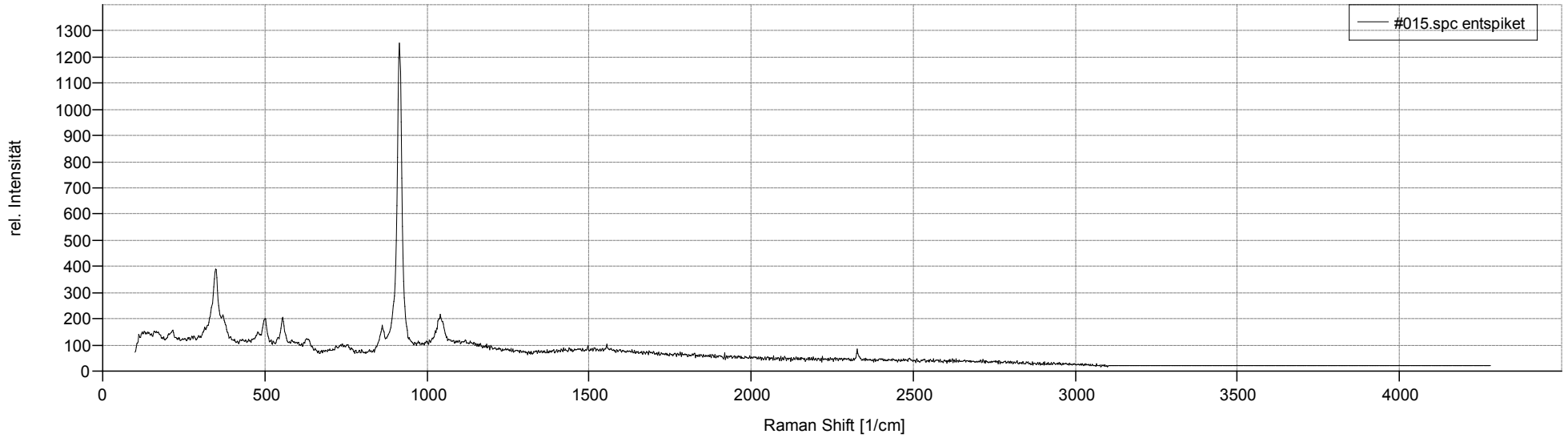

#010.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0
500
1000
1500
2000
2500
3000
3500
4000

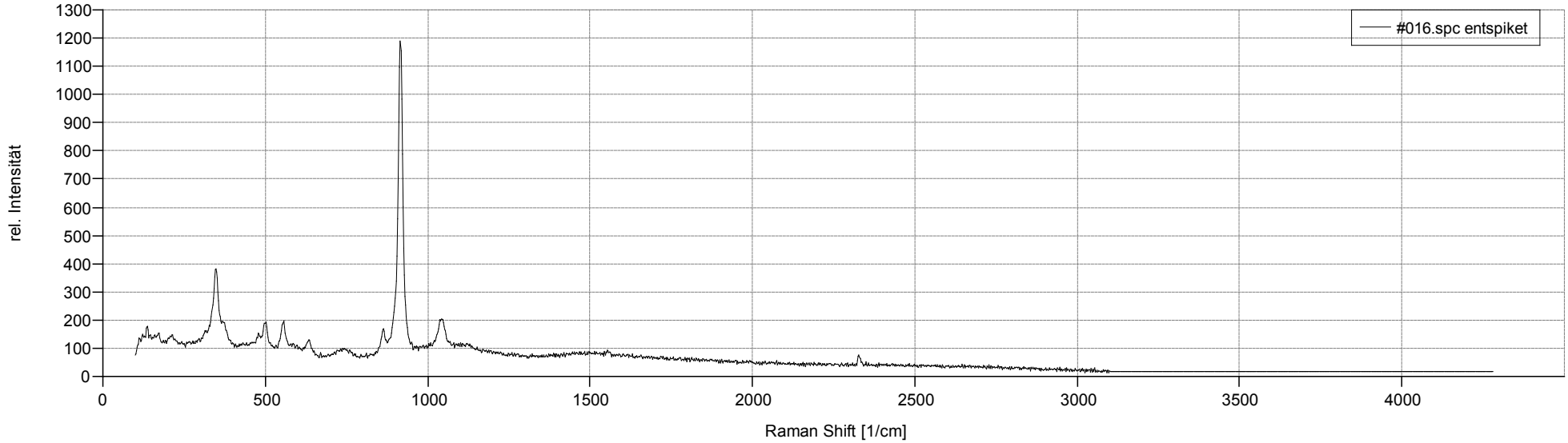

#011.spc entspiket
rel. Intensität
4200
3900
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

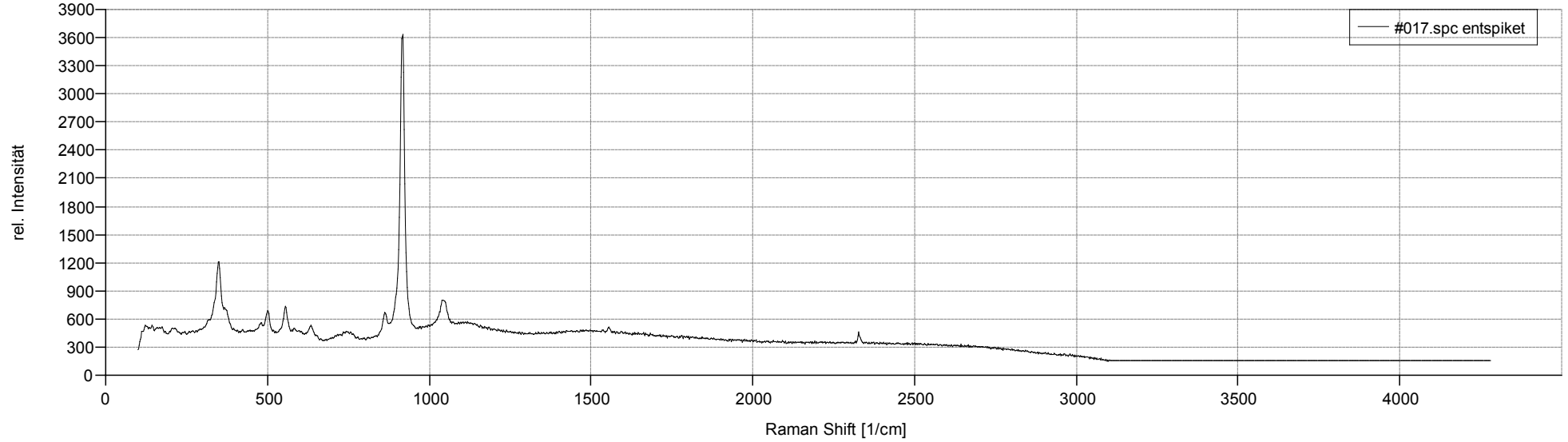

#012.spc entspiket
rel. Intensität
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#013.spc entspiket
rel. Intensität
Raman Shift [1/cm]
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
500
1000
1500
2000
2500
3000
3500
4000

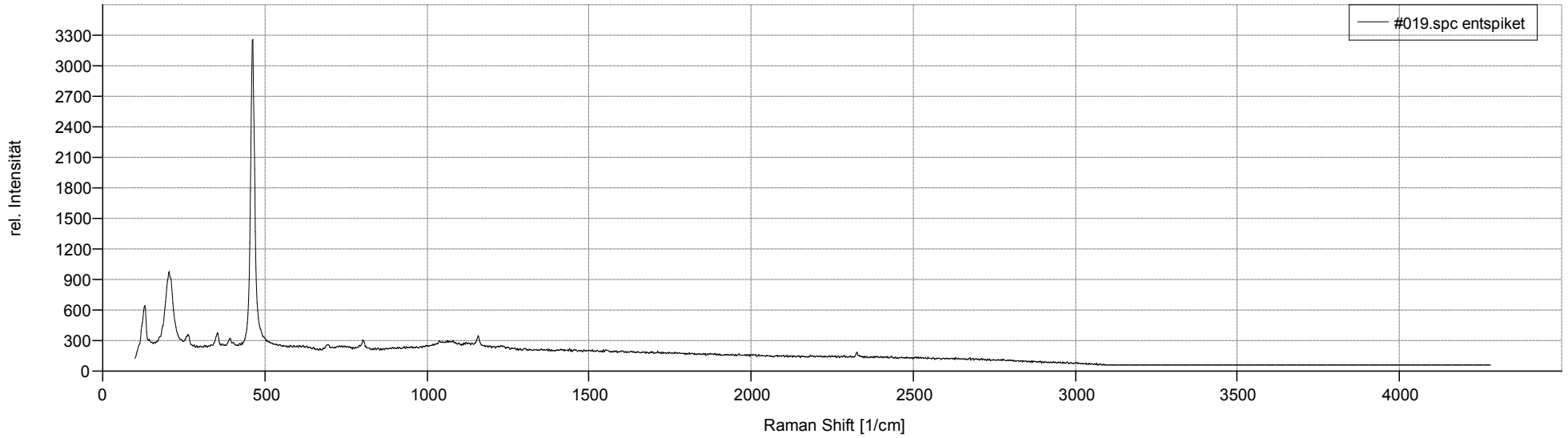

#014.spc entspiket
rel. Intensität
Raman Shift [1/cm]
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
500
1000
1500
2000
2500
3000
3500
4000

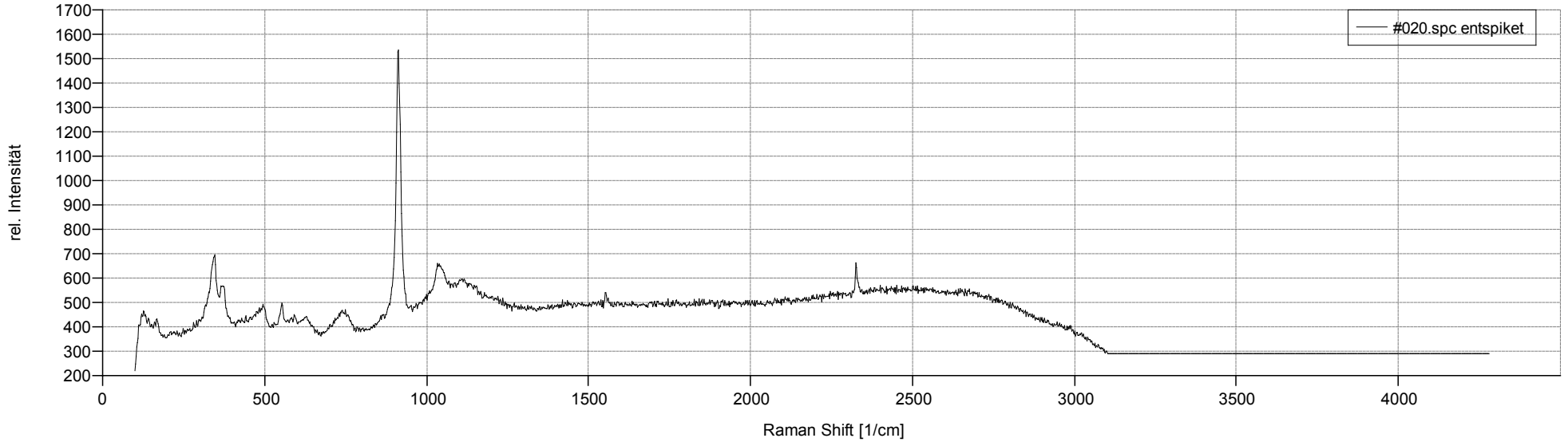

#015.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
0
500
1000
1500
2000
2500
3000
3500
4000

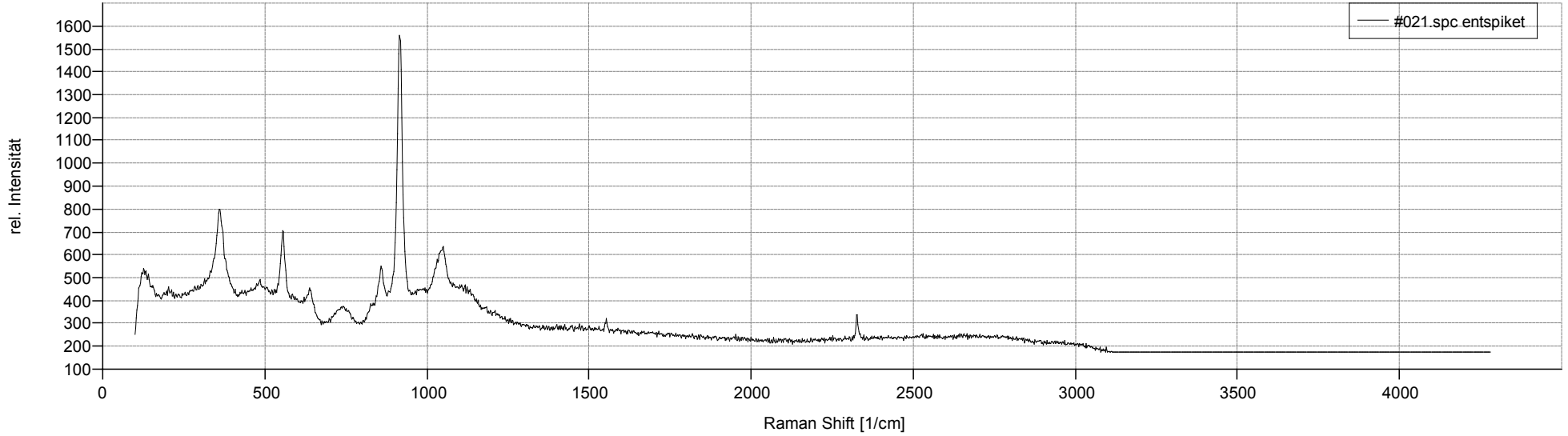

#016.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
0
500
1000
1500
2000
2500
3000
3500
4000

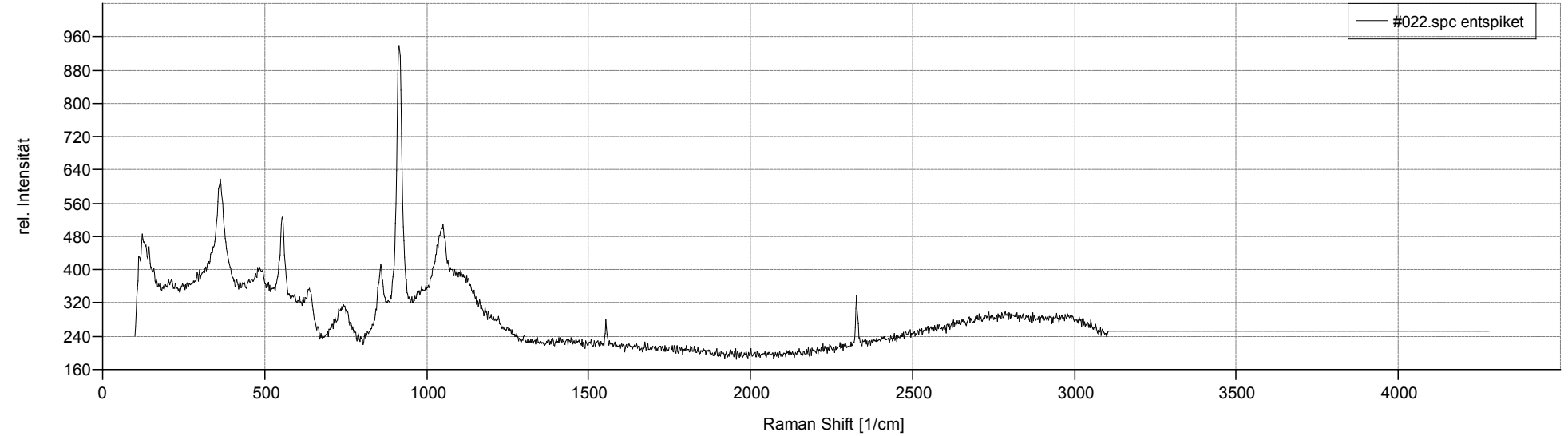

#017.spc entspiket
rel. Intensität
3900
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#018.spc entspiket
rel. Intensität
33000
30000
27000
24000
21000
18000
15000
12000
9000
6000
3000
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

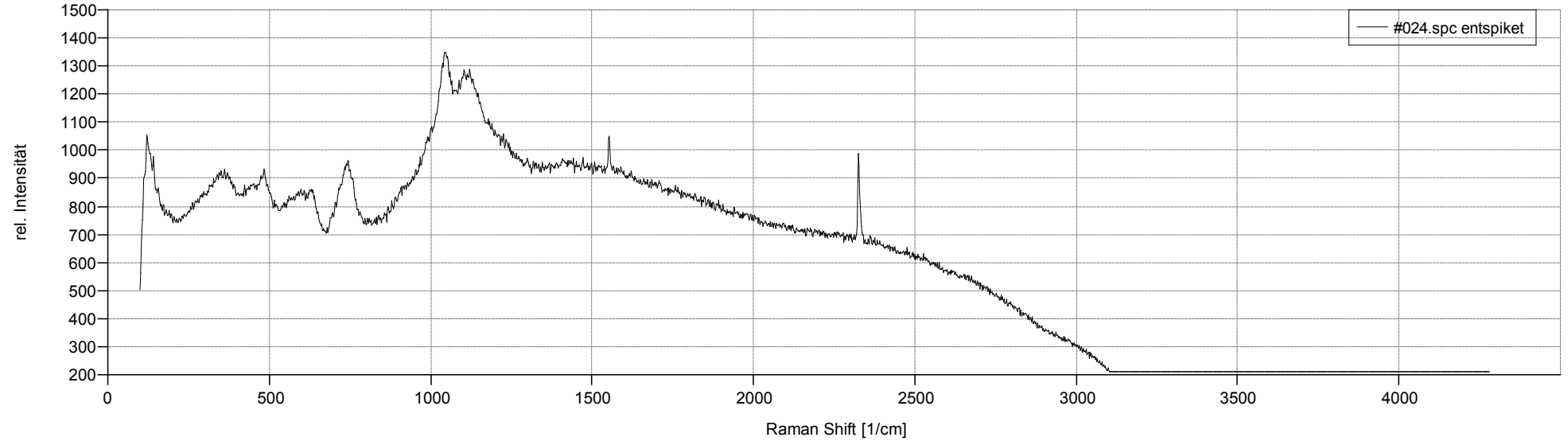

#019.spc entspiket
rel. Intensität
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

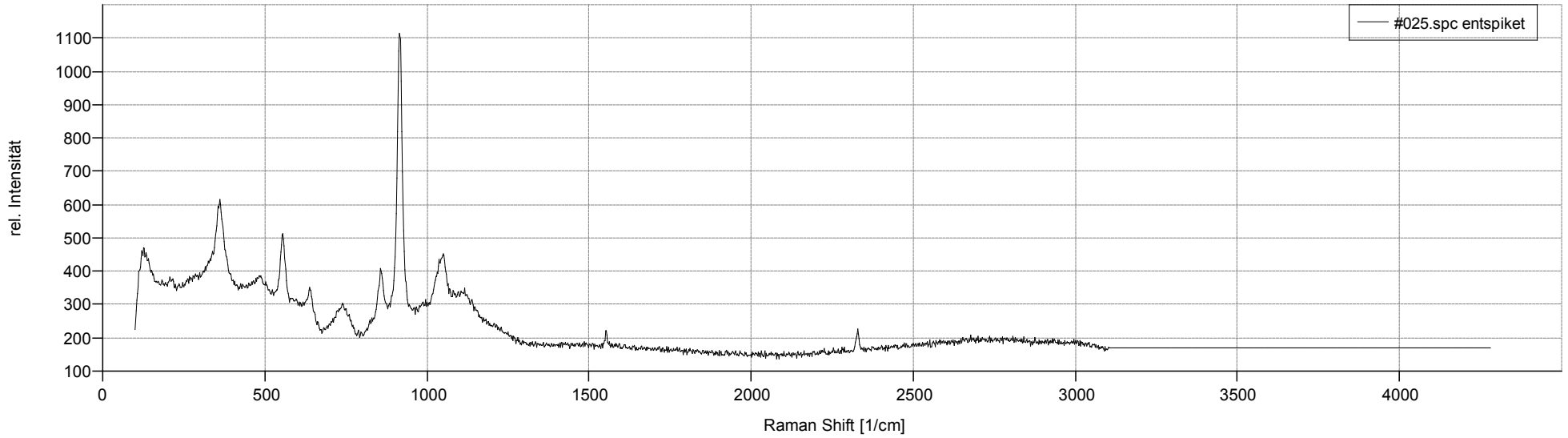

#020.spc entspiket
rel. Intensität
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

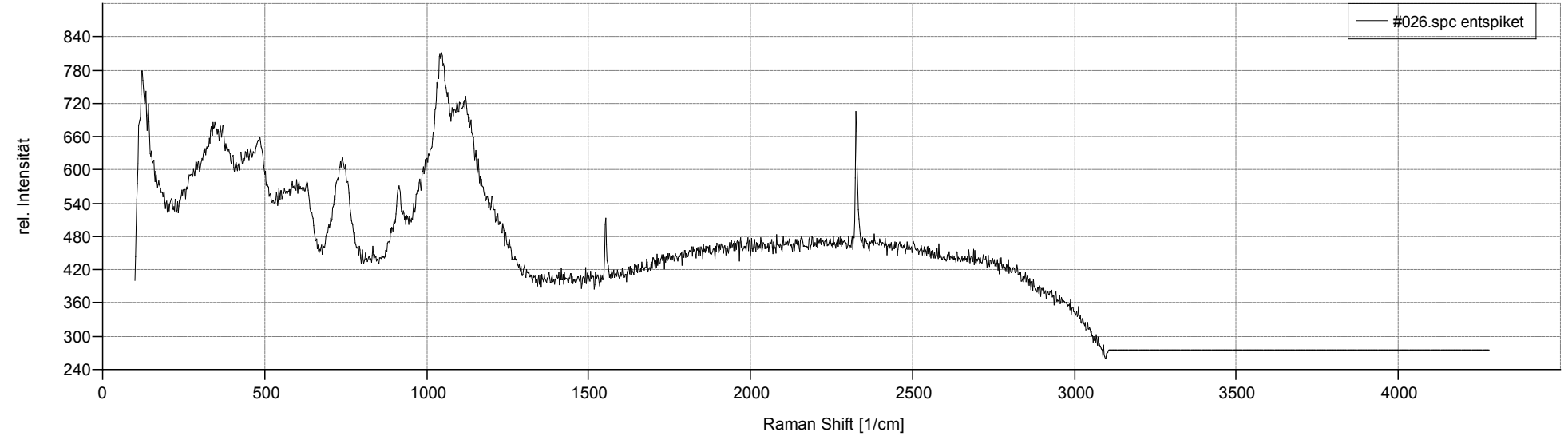

#021.spc entspiket
rel. Intensität
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#022.spc entspiket
rel. Intensität
960
880
800
720
640
560
480
400
320
240
160
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

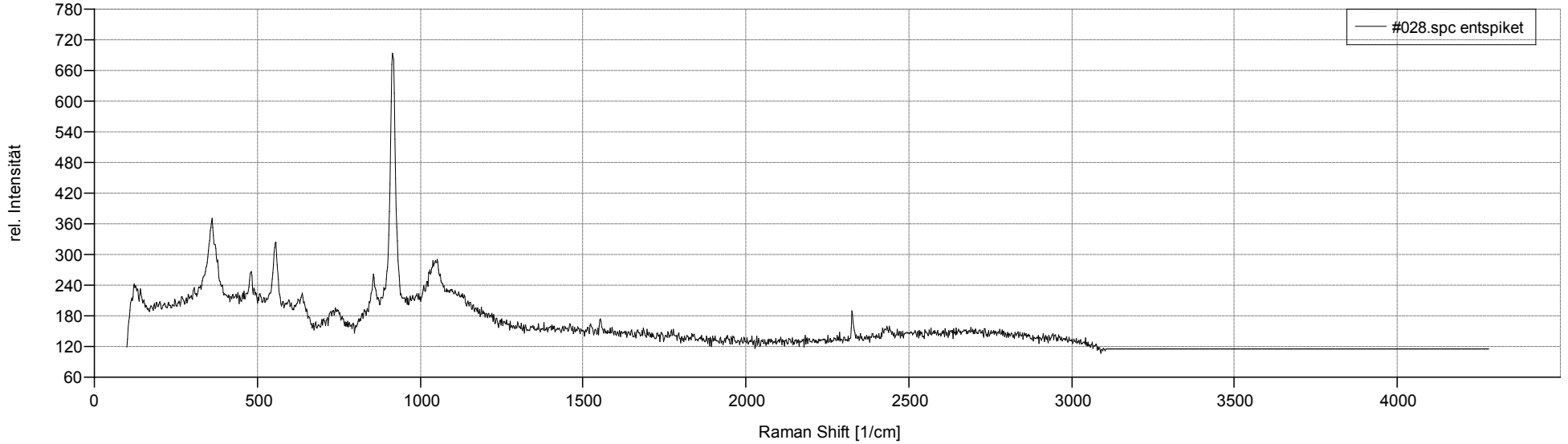

#023.spc entspiket
rel. Intensität
33000
30000
27000
24000
21000
18000
15000
12000
9000
6000
3000
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

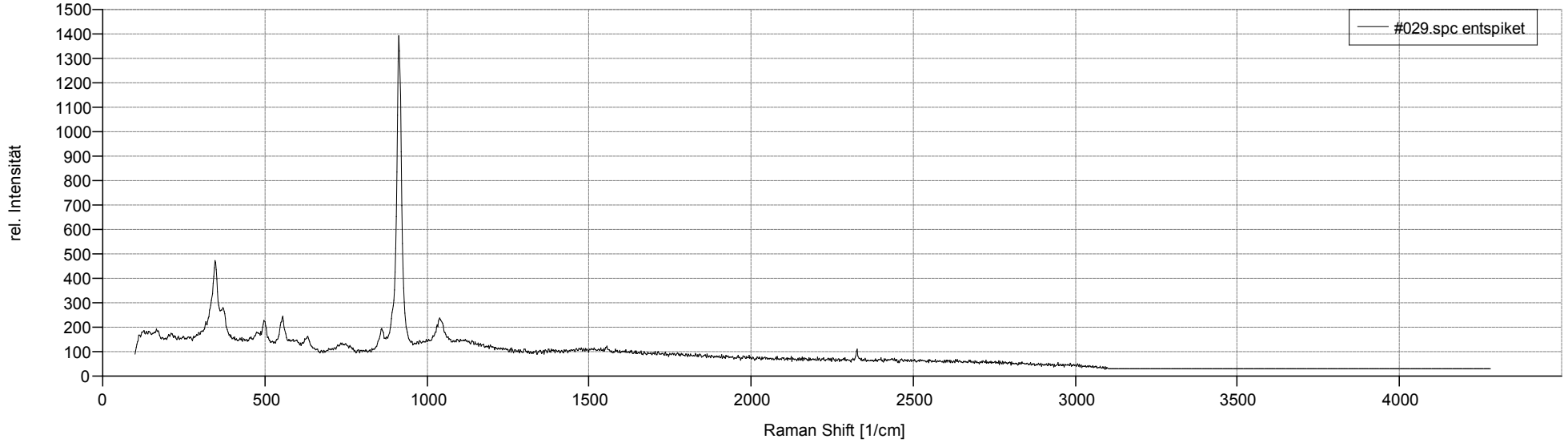

#024.spc entspiket
rel. Intensität
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

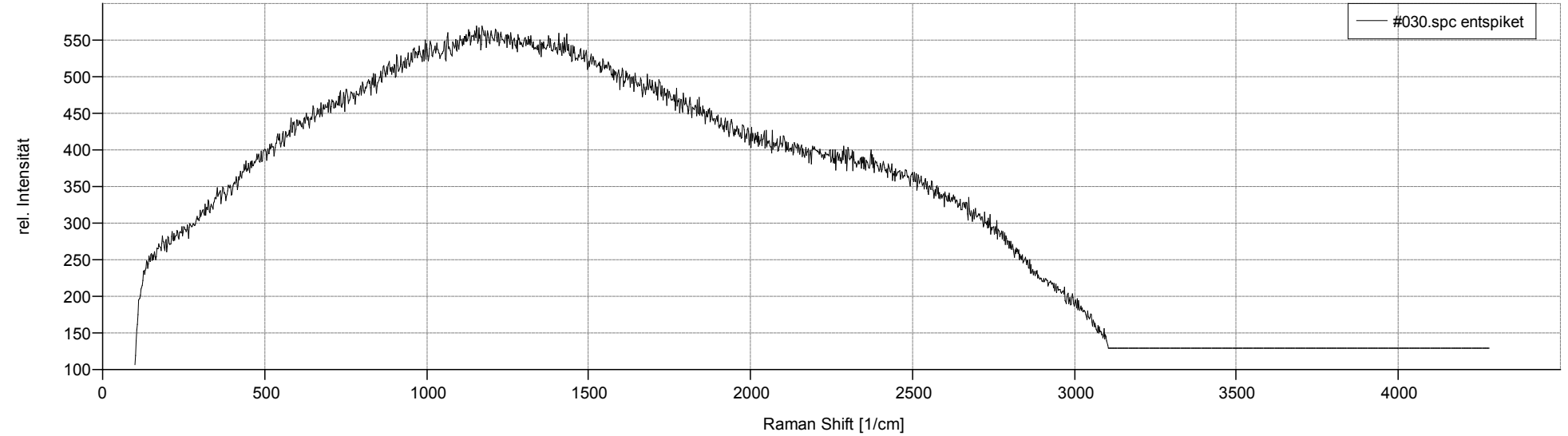

#025.spc entspiket
rel. Intensität
1100
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

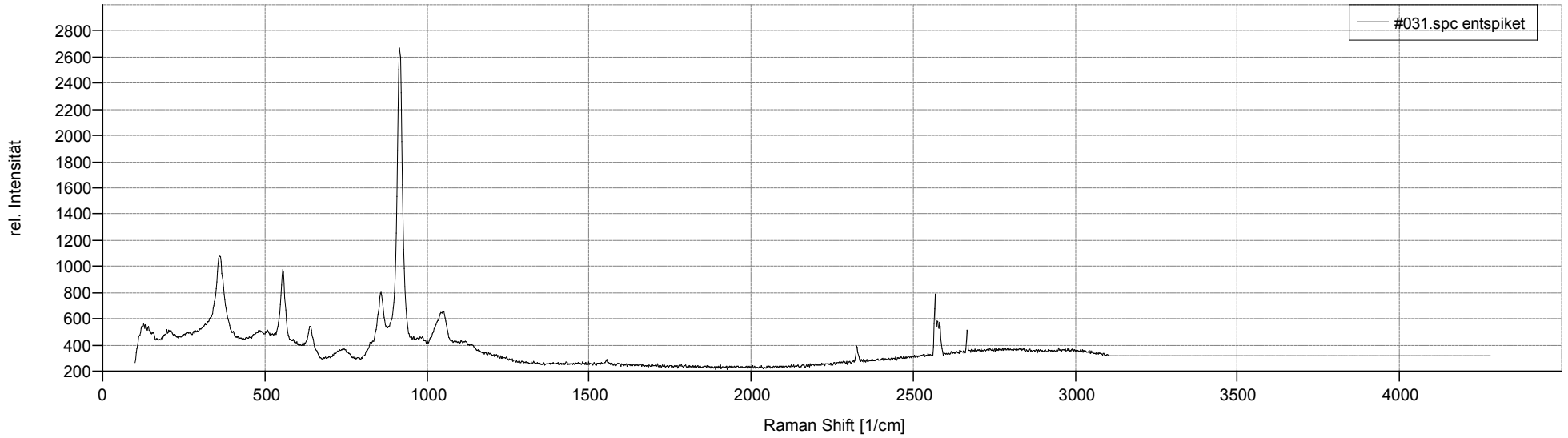

#026.spc entspiket
rel. Intensität
840
780
720
660
600
540
480
420
360
300
240
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

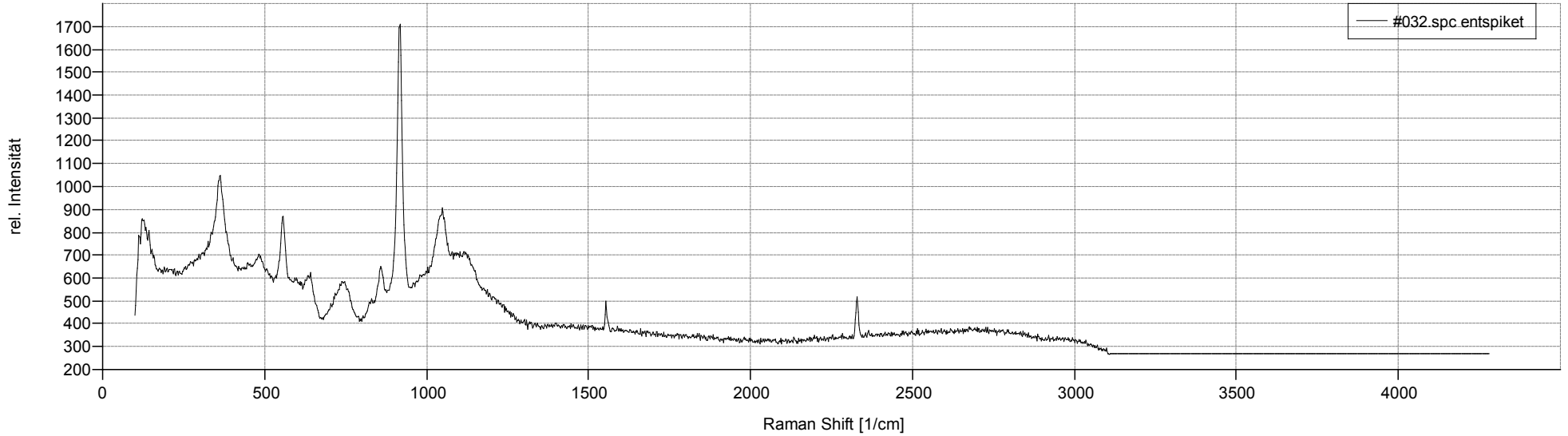

#027.spc entspiket
rel. Intensität
8800
8000
7200
6400
5600
4800
4000
3200
2400
1600
800
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

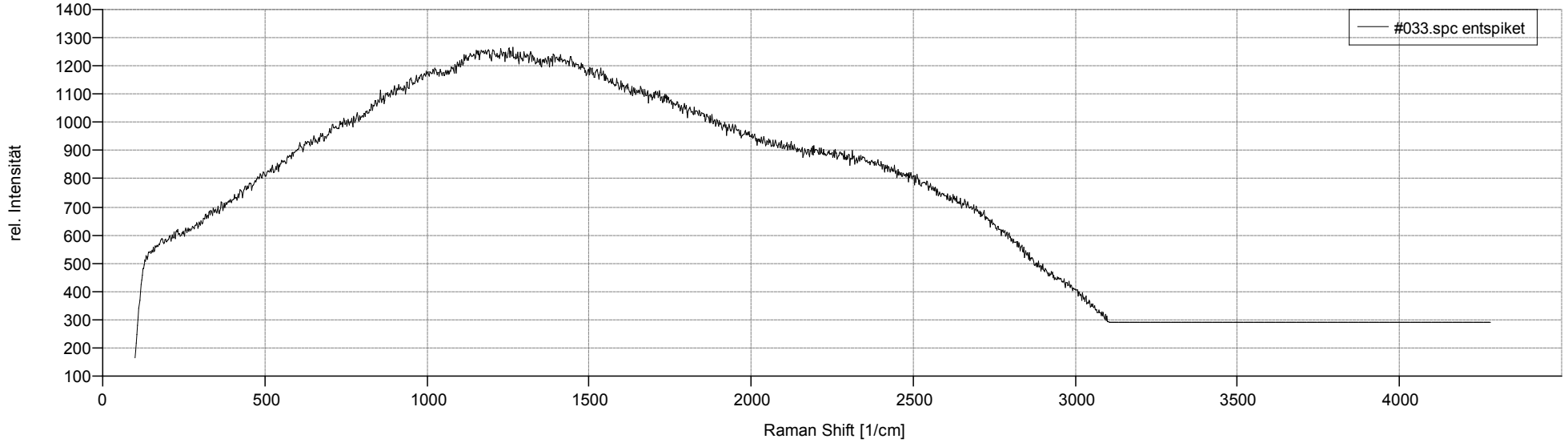

#028.spc entspiket
rel. Intensität
780
720
660
600
540
480
420
360
300
240
180
120
60
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

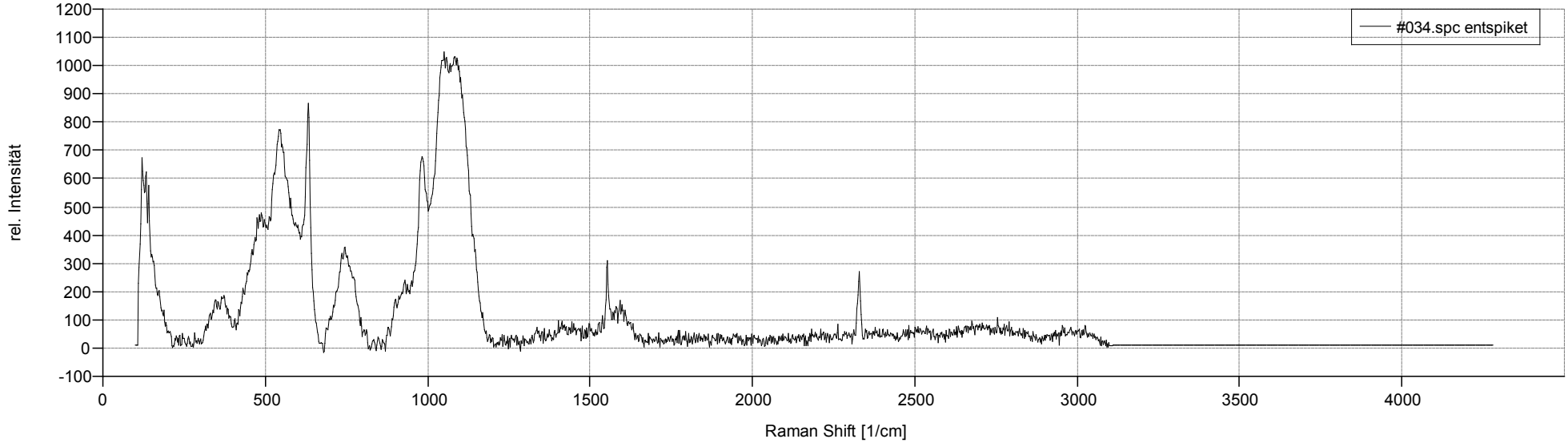

#029.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
0
500
1000
1500
2000
2500
3000
3500
4000

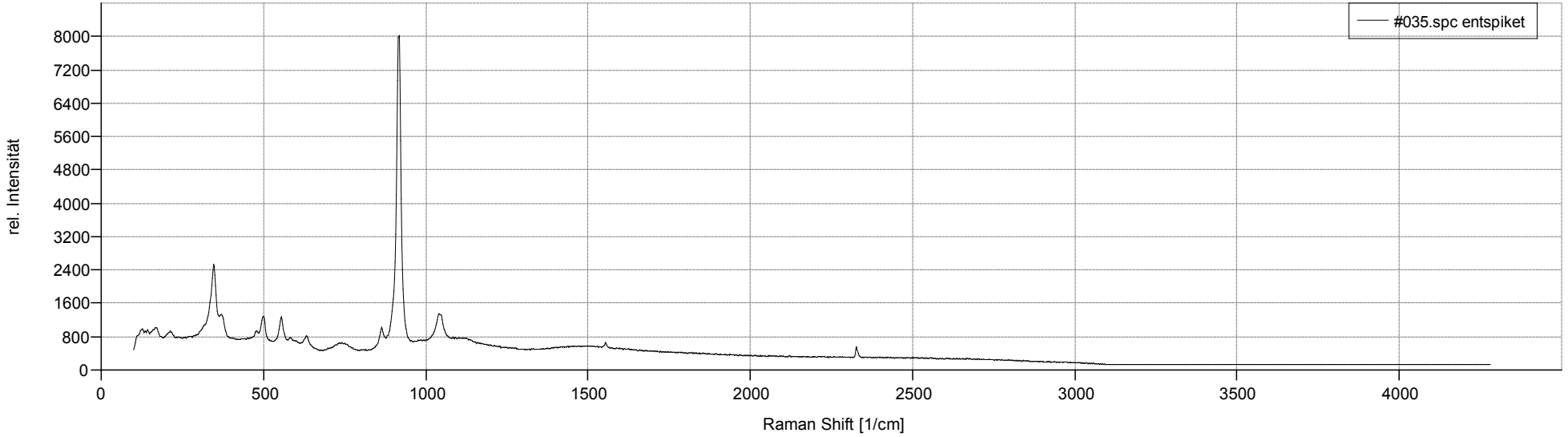

#030.spc entspiket
rel. Intensität
Raman Shift [1/cm]
100
150
200
250
300
350
400
450
500
550
0
500
1000
1500
2000
2500
3000
3500
4000

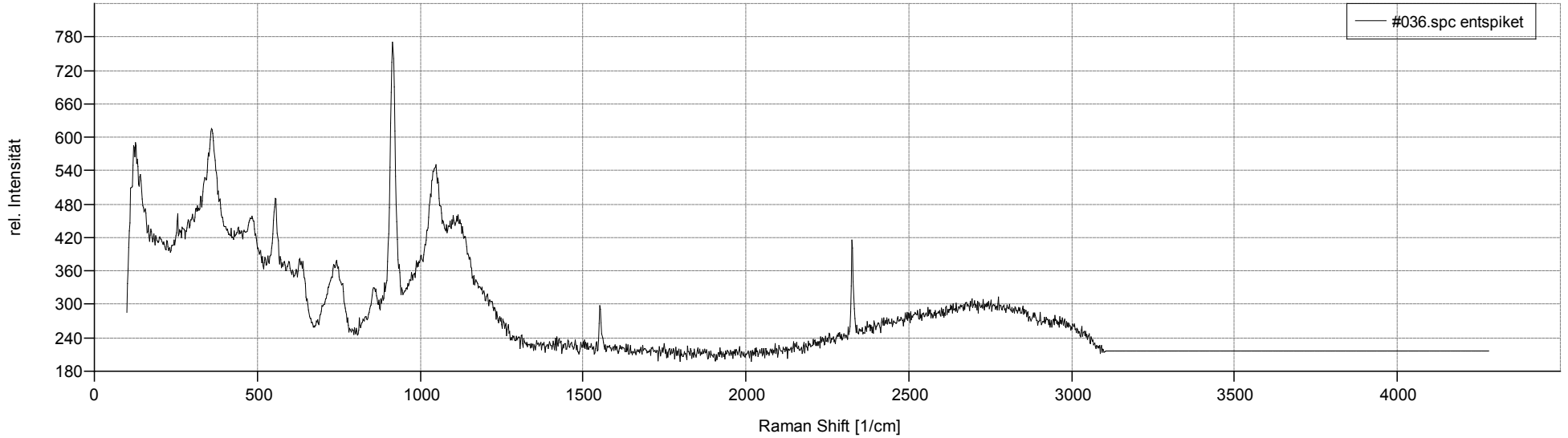

#031.spc entspiket
rel. Intensität
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

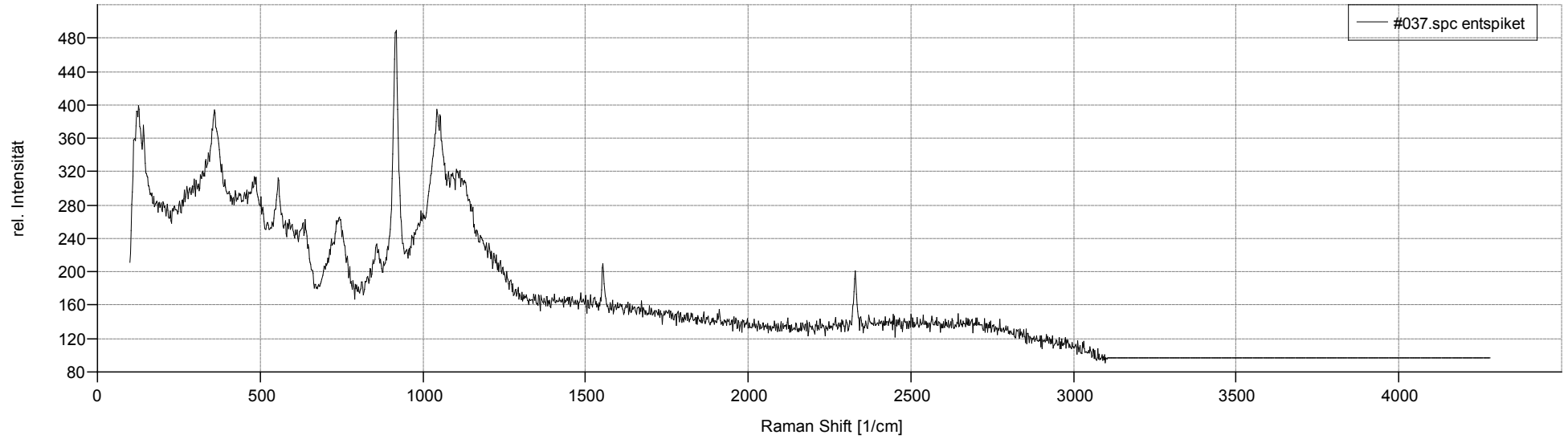

#032.spc entspiket
rel. Intensität
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

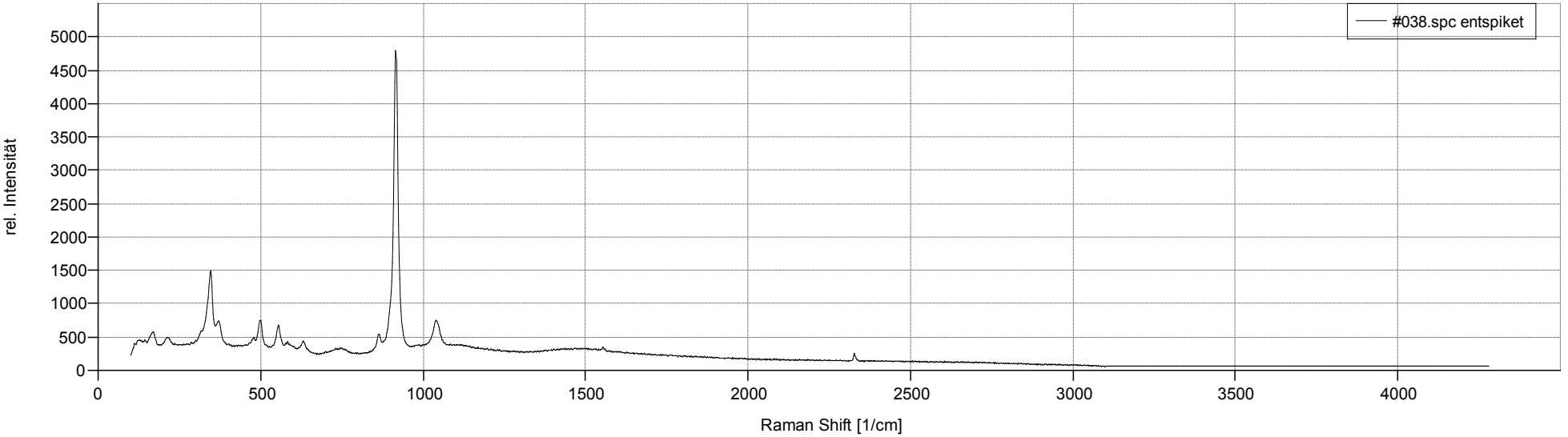

#033.spc entspiket
rel. Intensität
Raman Shift [1/cm]
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000

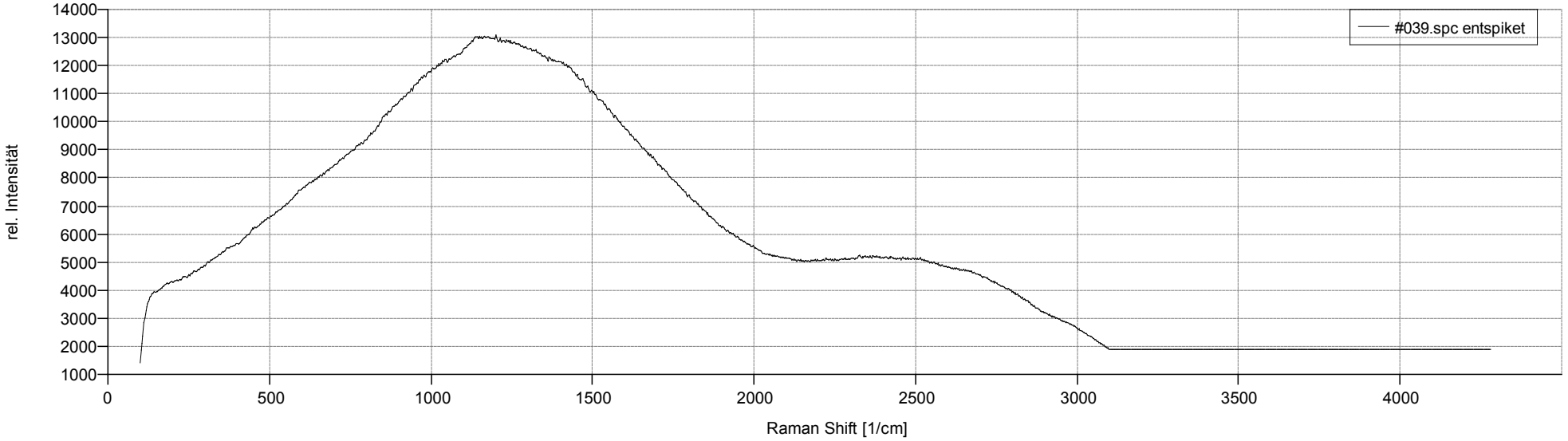

#034.spc entspiket
rel. Intensität
Raman Shift [1/cm]
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
-100
0
500
1000
1500
2000
2500
3000
3500
4000

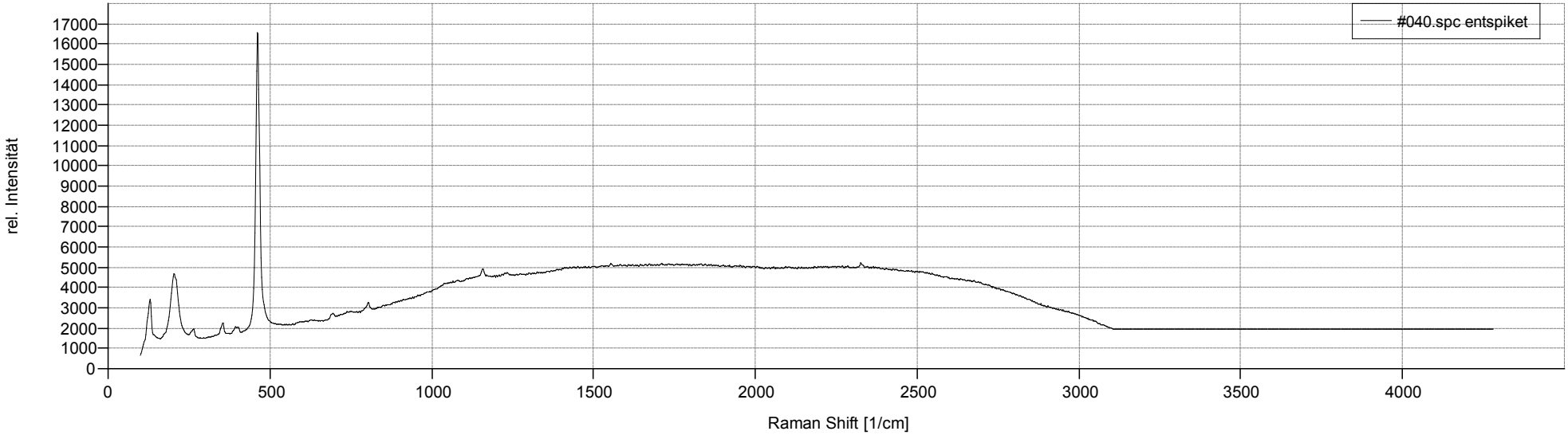

#035.spc entspiket
rel. Intensität
8000
7200
6400
5600
4800
4000
3200
2400
1600
800
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

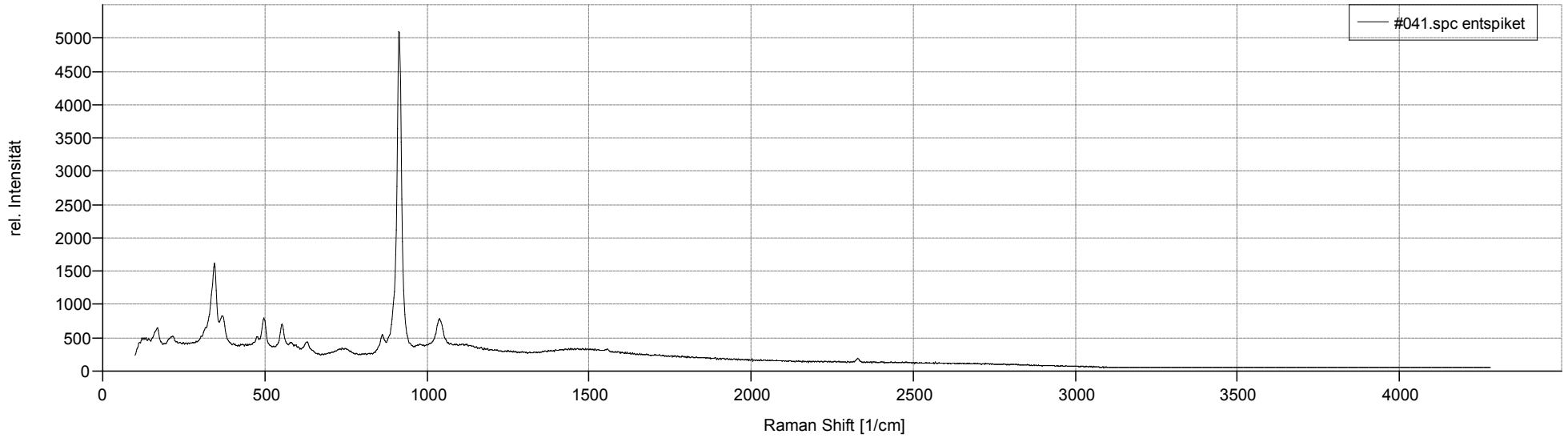

#036.spc entspiket
rel. Intensität
780
720
660
600
540
480
420
360
300
240
180
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

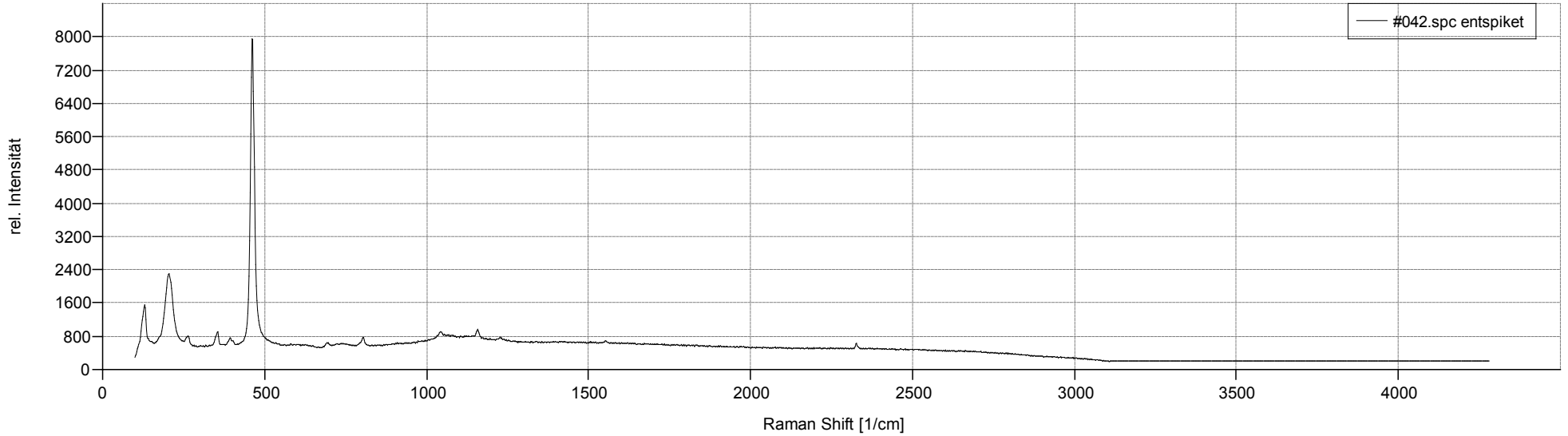

#037.spc entspiket
rel. Intensität
480
440
400
360
320
280
240
200
160
120
80
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

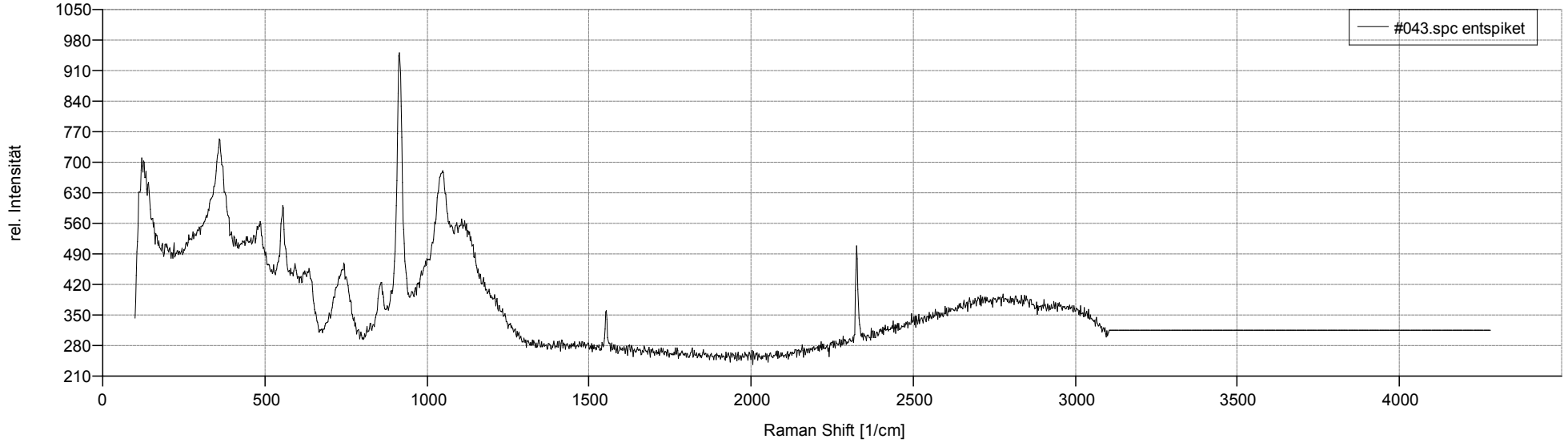

#038.spc entspiket
rel. Intensität
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

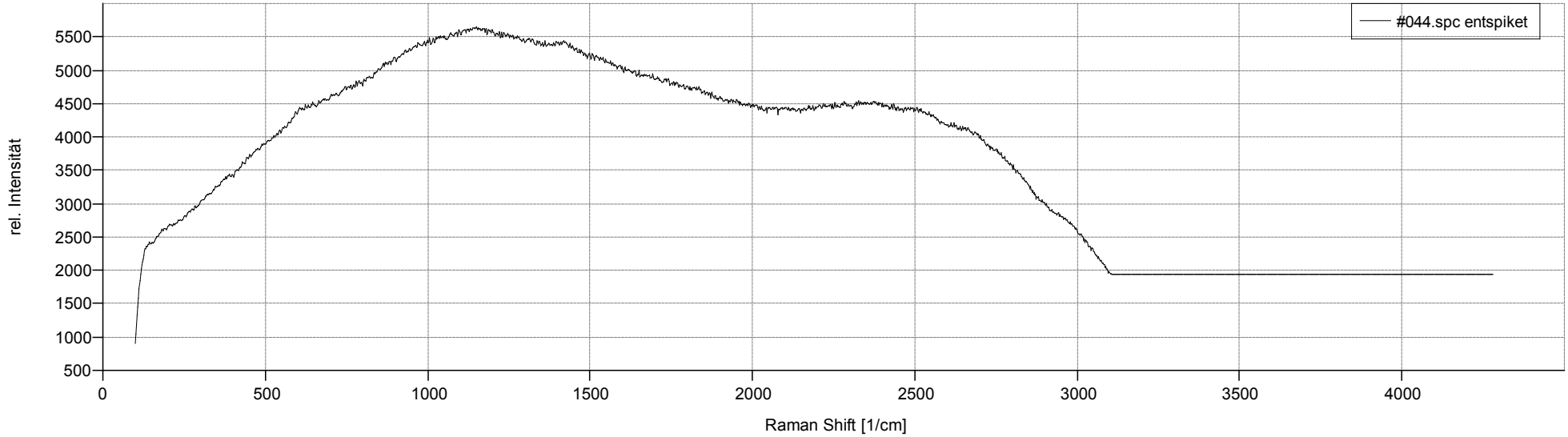

#039.spc entspiket
rel. Intensität
Raman Shift [1/cm]
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
500
1000
1500
2000
2500
3000
3500
4000

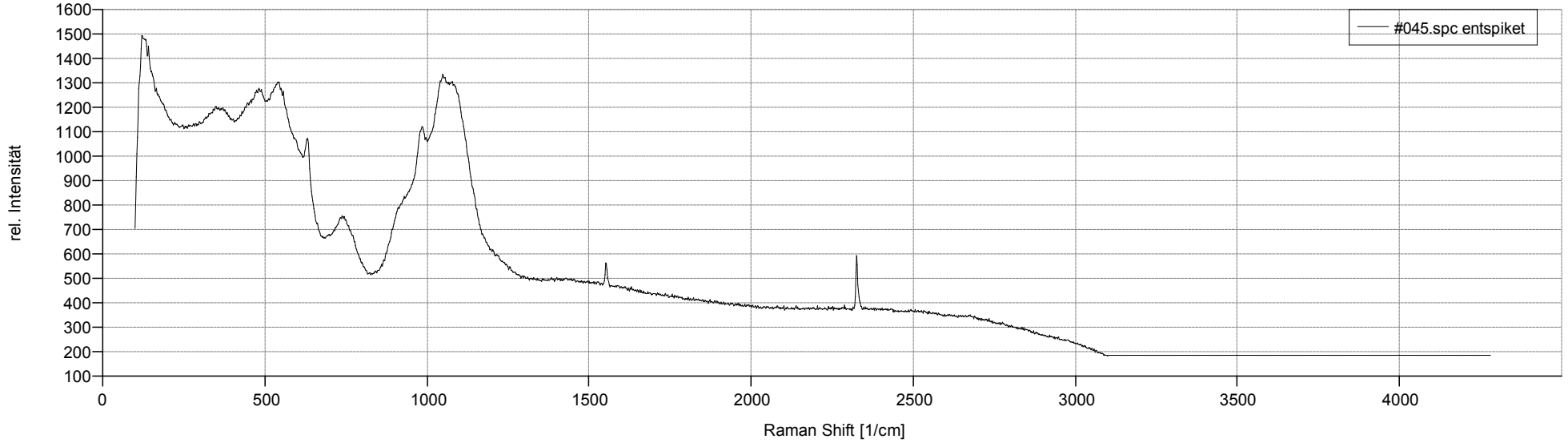

#040.spc entspiket
rel. Intensität
Raman Shift [1/cm]
17000
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
500
1000
1500
2000
2500
3000
3500
4000

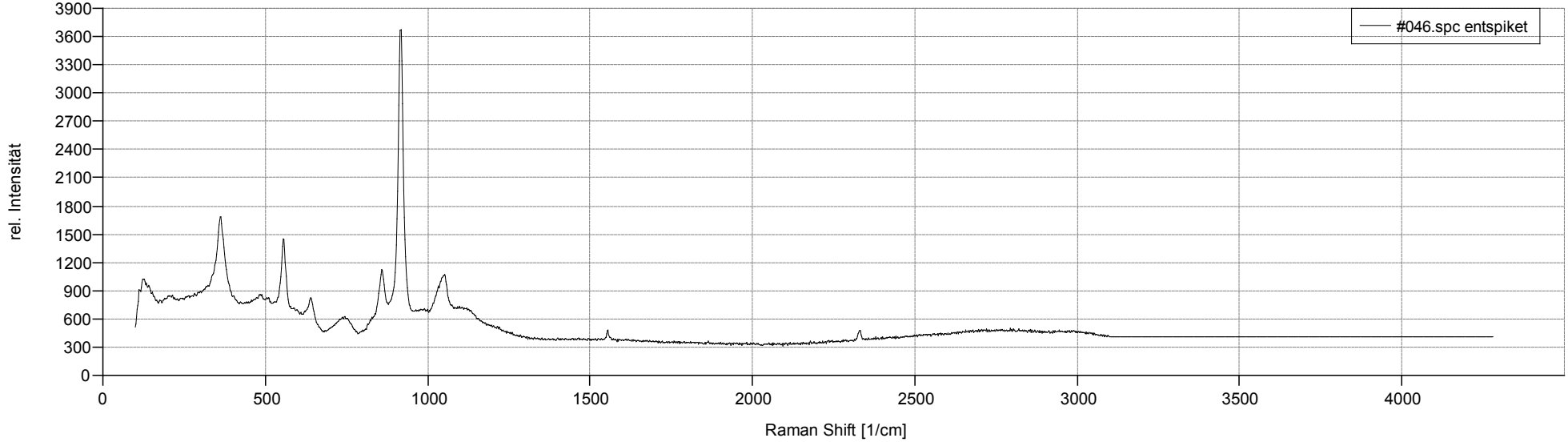

#041.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000

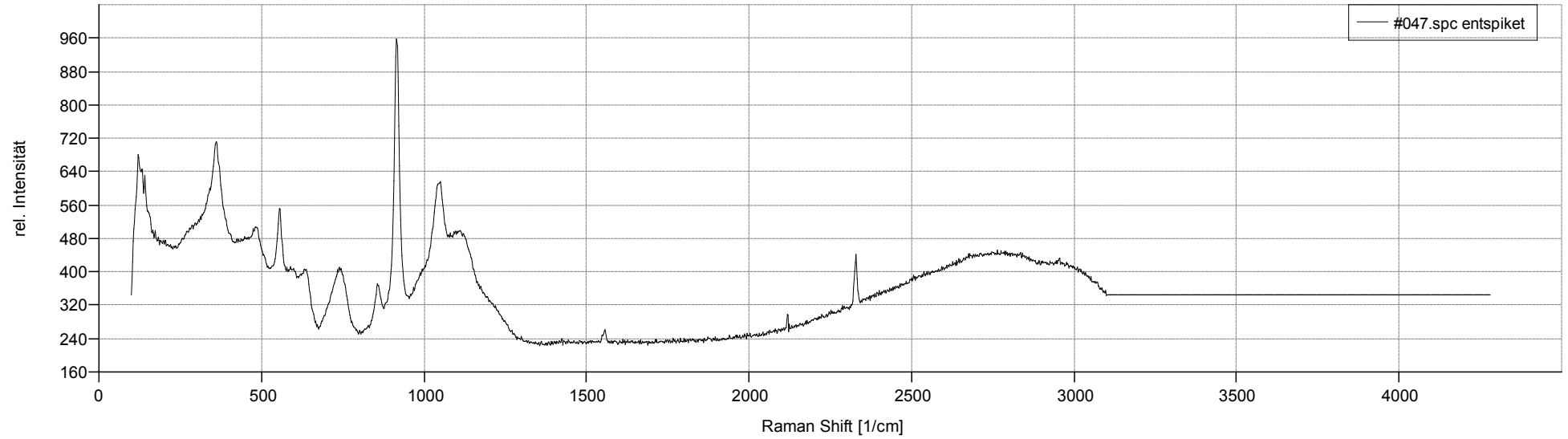

#042.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
500
1000
1500
2000
2500
3000
3500
4000
800
1600
2400
3200
4800
5600
6400
7200
8000

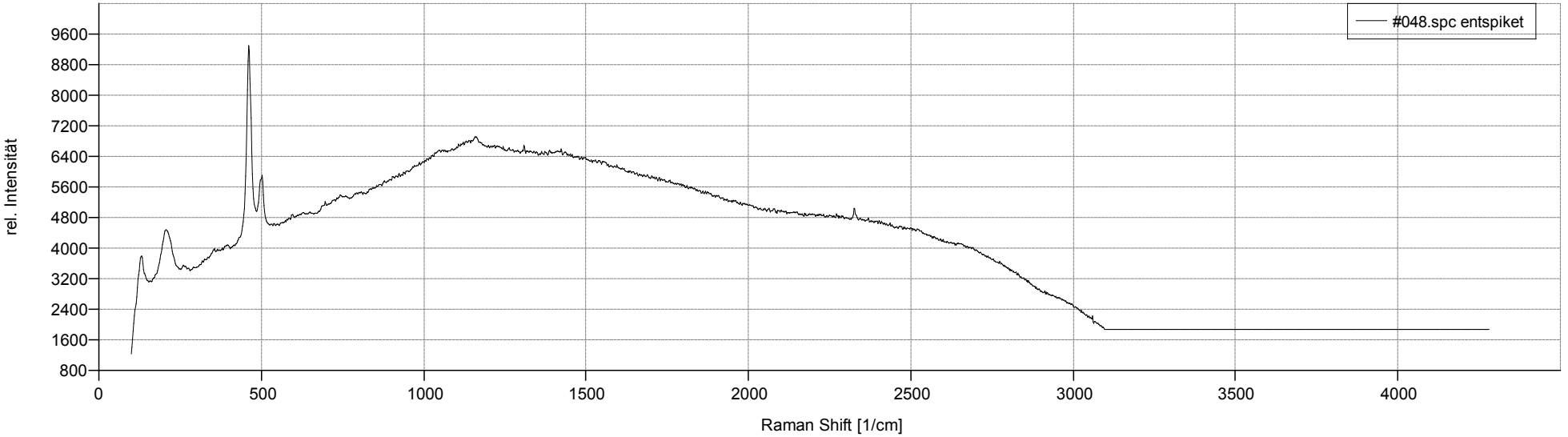

#043.spc entspiket
rel. Intensität
1050
980
910
840
770
700
630
560
490
420
350
280
210
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

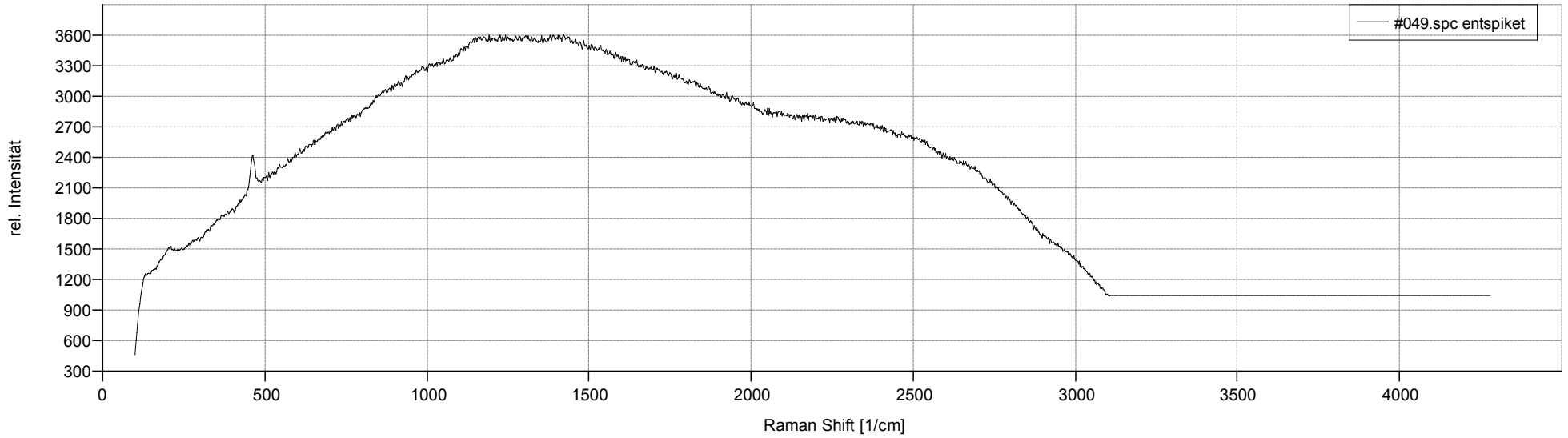

#044.spc entspiket
rel. Intensität
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

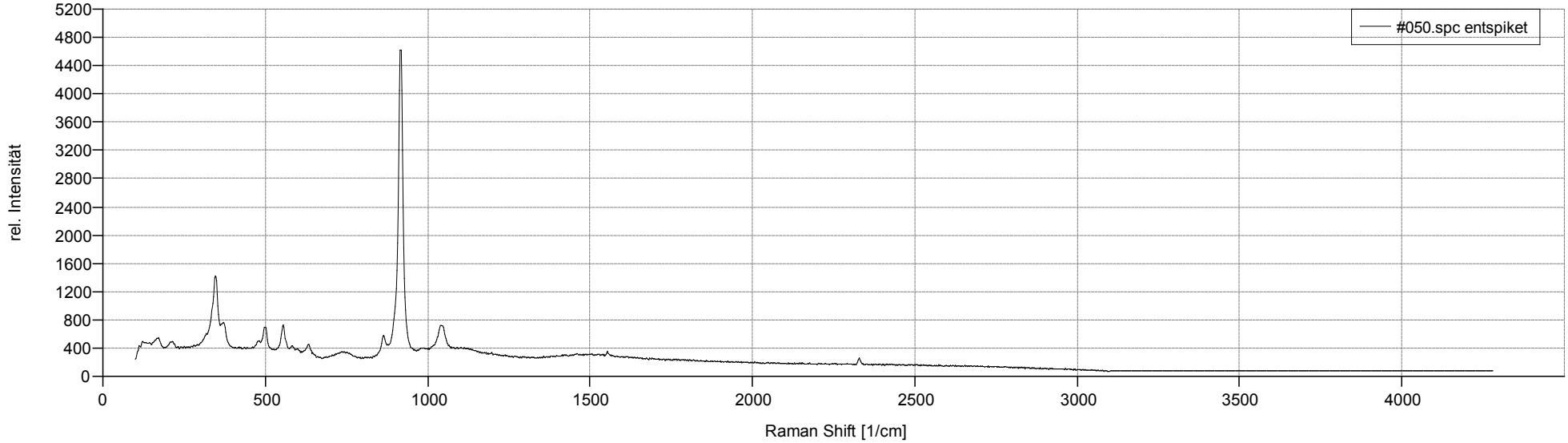

#045.spc entspiket
rel. Intensität
Raman Shift [1/cm]
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000

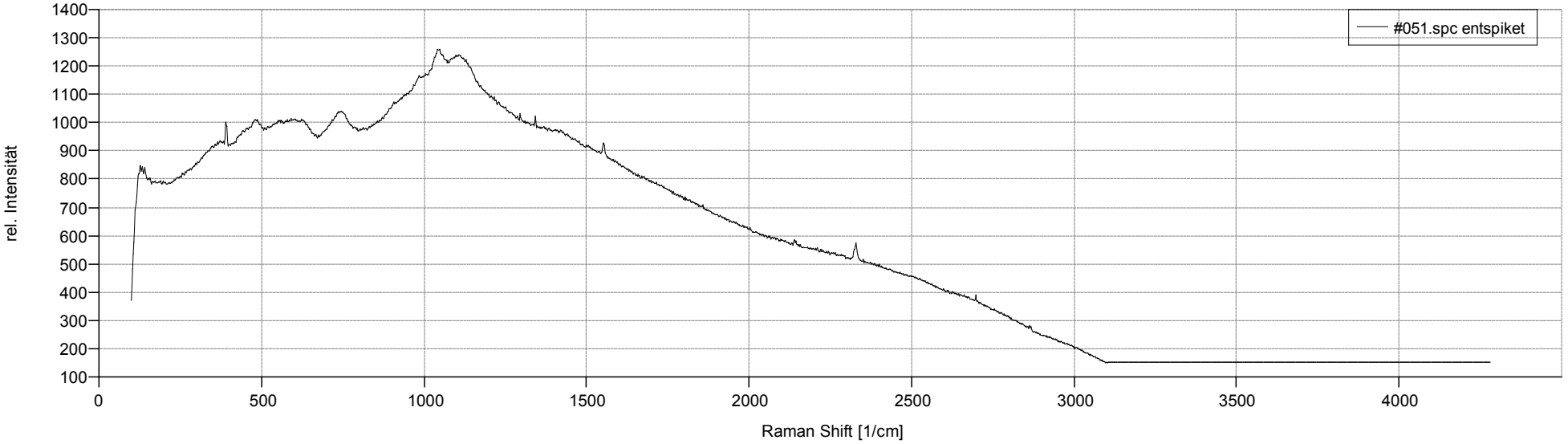

#046.spc entspiket
rel. Intensität
Raman Shift [1/cm]
3900
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
0
500
1000
1500
2000
2500
3000
3500
4000


#047.spc entspiket
rel. Intensität
960
880
800
720
640
560
480
400
320
240
160
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#048.spc entspiket
rel. Intensität
9600
8800
8000
7200
6400
5600
4800
4000
3200
2400
1600
800
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#049.spc entspiket
rel. Intensität
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#050.spc entspiket
rel. Intensität
5200
4800
4400
4000
3600
3200
2800
2400
2000
1600
1200
800
400
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

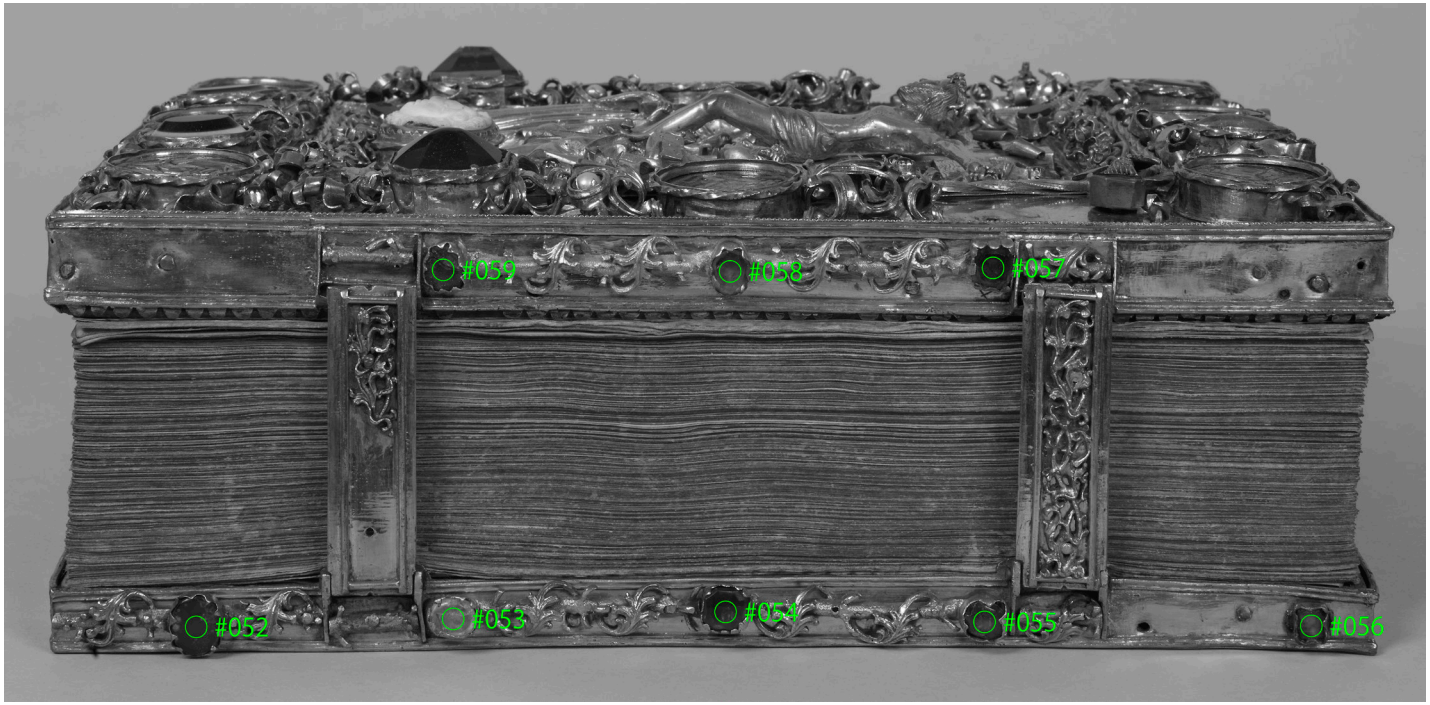

#051.spc entspiket
rel. Intensität
Raman Shift [1/cm]
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000

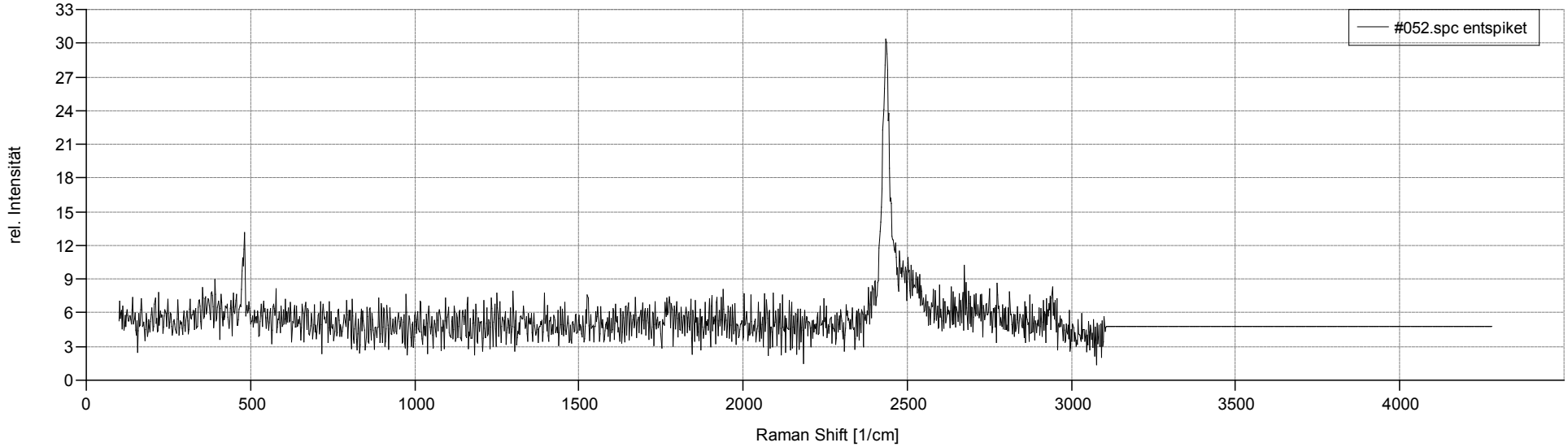
Raman-Analysis:
Mapping of measurement points and spectra
Fore edge

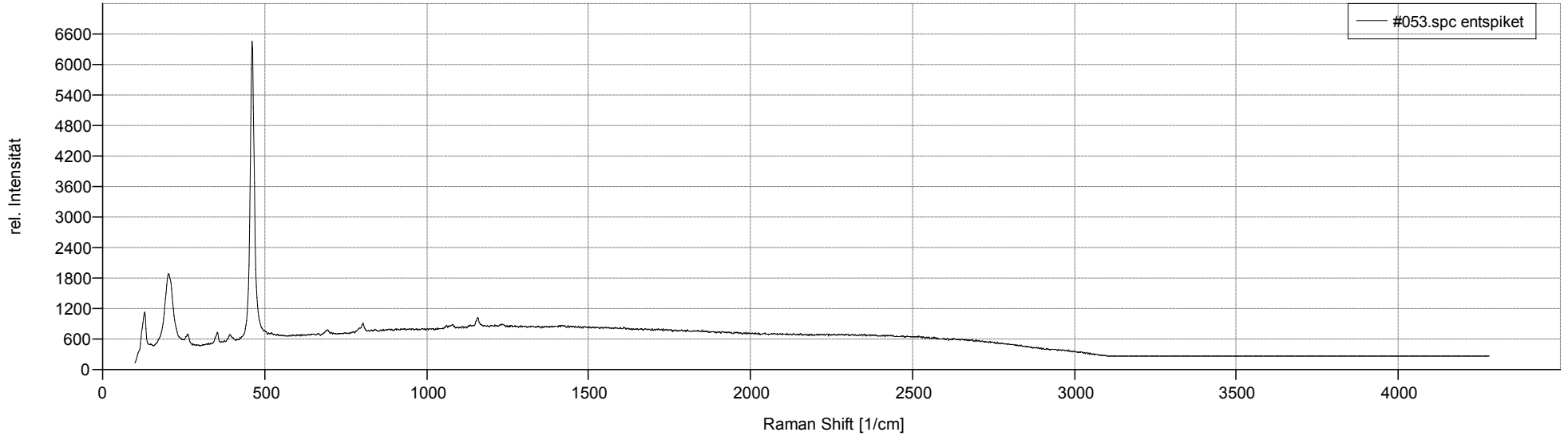
Scanning parameters

Instrument:	Enwave Optronics, ProRaman-L
Scanning mode:	dispersive mode
Laser:	532 nm, max. 50 mW
Spectral resolution:	7 cm^{-1}
Spectral range:	100-3100 cm^{-1}

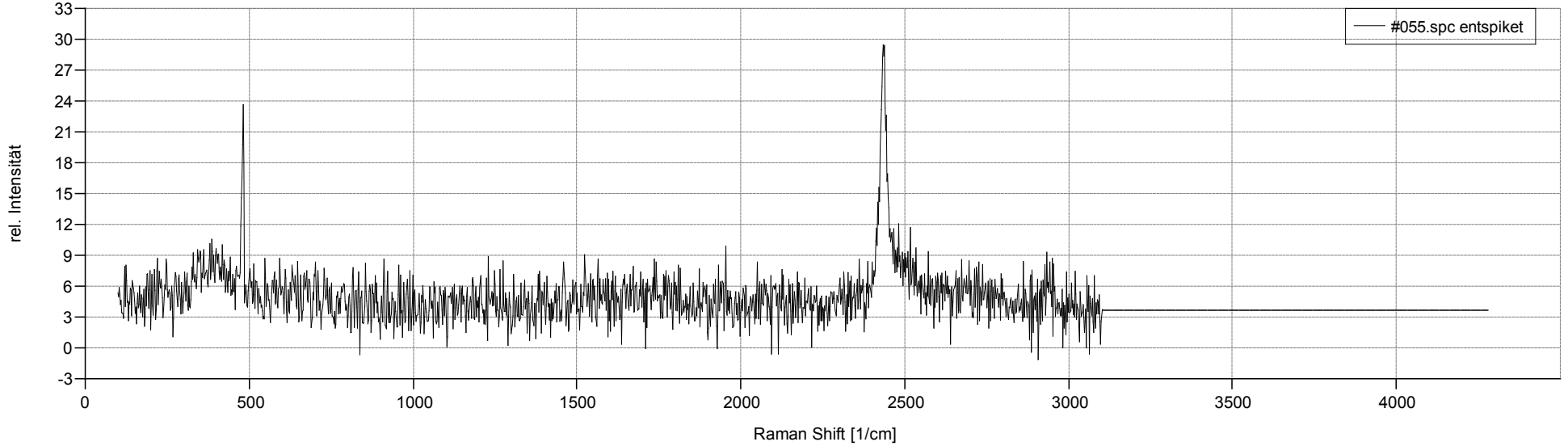
Spectra:
(filename description: #number of scan.dx)

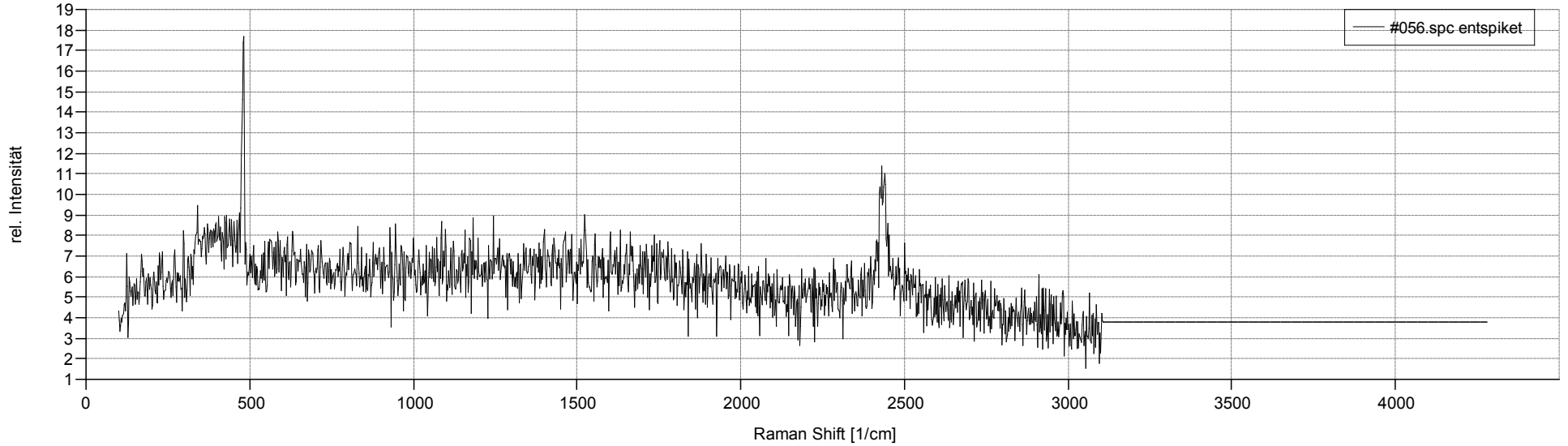


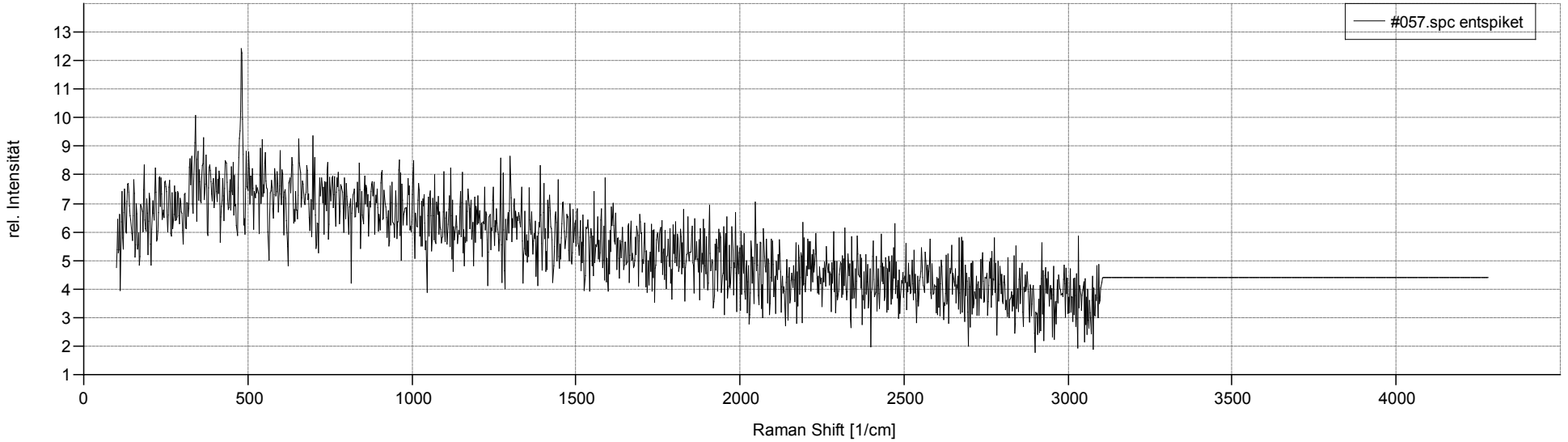

#052.spc entspiket
rel. Intensität
33
30
27
24
21
18
15
12
9
6
3
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

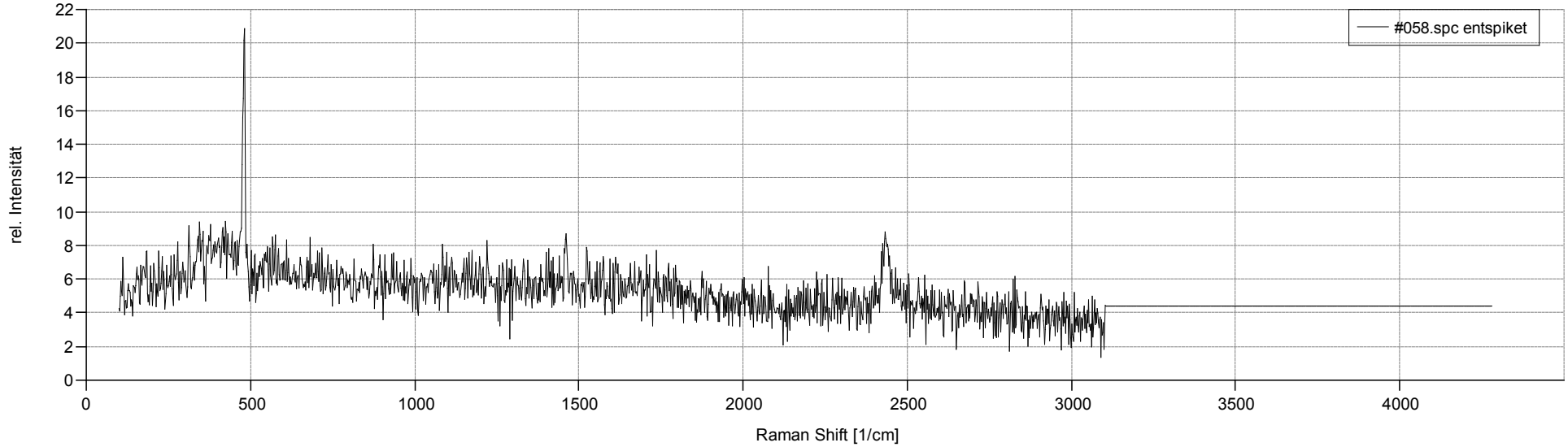

#053.spc entspiket
rel. Intensität
6600
6000
5400
4800
4200
3600
3000
2400
1800
1200
600
0
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]

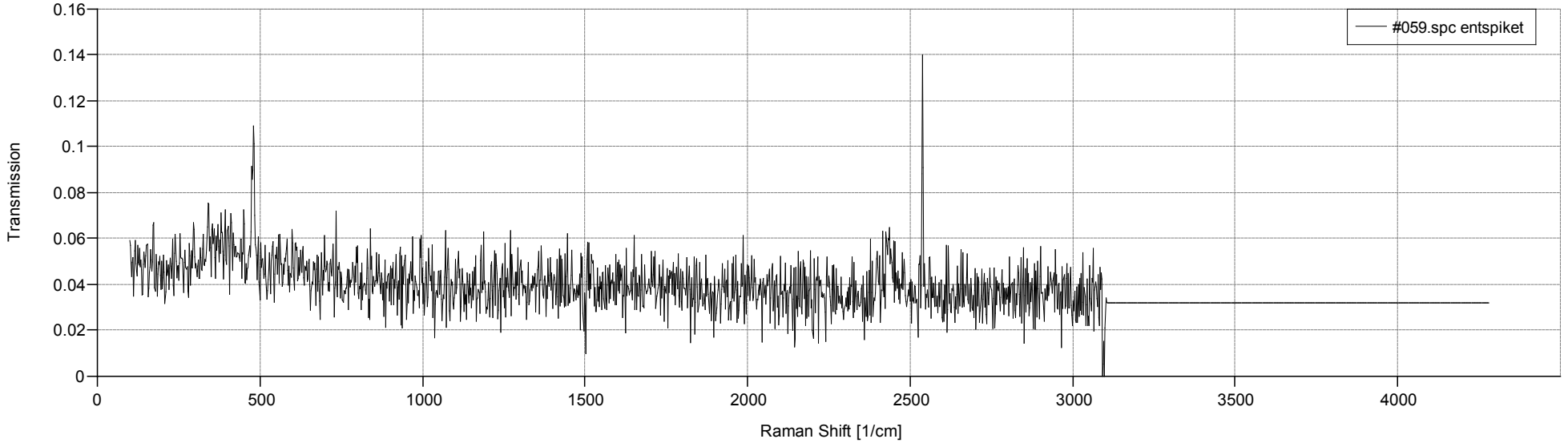

#054.spc entspiket
rel. Intensität
4800
4400
4000
3600
3200
2800
2400
2000
1600
1200
800
400
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#055.spc entspiket
rel. Intensität
33
30
27
24
21
18
15
12
9
6
3
0
-3
0
500
1000
1500
2000
2500
3000
3500
4000
Raman Shift [1/cm]


#056.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
500
1000
1500
2000
2500
3000
3500
4000
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19


#057.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
500
1000
1500
2000
2500
3000
3500
4000
1
2
3
4
5
6
7
8
9
10
11
12
13


#058.spc entspiket
rel. Intensität
Raman Shift [1/cm]
0
2
4
6
8
10
12
14
16
18
20
22
0
500
1000
1500
2000
2500
3000
3500
4000


#059.spc entspiket
Transmission
Raman Shift [1/cm]
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0
500
1000
1500
2000
2500
3000
3500
4000