Resolution:

**SUCC**

Begin resolution calculation #############################

Lowest FWHM fit: [2.55355355 8.92595431] | Highest FWHM fit: [2.83983984 8.97066708]

Deviations from initial guesses for worst fit (percent):

[-1.52 0. 28.84]

[-5.04 0. 4.25]

Deviations from initial guesses for best fit (percent):

[-3.27 0. 17.13]

Choose area to calculate source size.

Box saved at [[176, 259], [999, 1035]]

Box successfully created.

Source size from event 16: 0.0746+-0.013 mm

Lowest FWHM fit: [2.89489489 4.19908461] | Highest FWHM fit: [3.18118118 4.24902854]

Deviations from initial guesses for worst fit (percent):

[-2.730e+00 1.000e-02 3.922e+01]

[-3.47 0.01 8.46]

Deviations from initial guesses for best fit (percent):

[-3.150e+00 1.000e-02 2.467e+01]

Choose area to calculate source size.

Box saved at [[203, 286], [1005, 1041]]

Box successfully created.

Source size from event 18: 0.1088+-0.0283 mm

Lowest FWHM fit: [2.74624625 9.12704561] | Highest FWHM fit: [3.11511512 9.06451571]

Deviations from initial guesses for worst fit (percent):

[-3.160e+00 2.000e-02 3.615e+01]

[-6. 0.02 8.83]

Deviations from initial guesses for best fit (percent):

[-4.610e+00 2.000e-02 2.331e+01]

Choose area to calculate source size.

Box saved at [[186, 267], [1006, 1043]]

Box successfully created.

Source size from event 19: 0.1092+-0.0215 mm

Event| Spec| Gauss| d\_gauss+| d\_gauss-| sigma\_so| d\_so| Doppler d\_dopp| sigma\_sp| d\_sp+| d\_sp-|

1 16 KAP 2.6912 0.1486 0.1376 1.1555 0.2012 0.474 0.1 2.3838 0.1951 0.1845

2 18 KAP 3.0325 0.1486 0.1376 1.6846 0.4377 0.474 0.1 2.4766 0.3494 0.3426

3 19 KAP 2.9224 0.1927 0.1762 1.6908 0.3325 0.474 0.1 2.3360 0.3412 0.3270

**DUCC**

Begin resolution calculation #############################

50.23255049828233

277.9147139610942

328.1472644593765

Lowest FWHM fit: [ 1.63963964 45.90587031] | Highest FWHM fit: [ 1.84334334 46.65884337]

Deviations from initial guesses for worst fit (percent):

[-1.430e+00 1.000e-02 5.271e+01]

[-6.840e+00 1.000e-02 2.472e+01]

Deviations from initial guesses for best fit (percent):

[-4.12e+00 1.00e-02 3.93e+01]

Choose area to calculate source size.

Box saved at [[174, 264], [400, 431]]

Box successfully created.

Source size from event 19: 0.1181+-0.0149 mm

Event| Spec| Gauss| d\_gauss+| d\_gauss-| sigma\_so| d\_so| Doppler d\_dopp| sigma\_sp| d\_sp+| d\_sp-|

1 19 ADP 1.7387 0.1046 0.0991 0.4909 0.0619 0.474 0.1 1.5992 0.119 0.1133

Begin resolution calculation #############################

Choose an E range for alignment of plots.

Press enter when done:

Limits = [1606.0, 1610.0]

Lowest FWHM fit: [0.96796797 2.72623799] | Highest FWHM fit: [1.75525526 2.74813655]

Deviations from initial guesses for worst fit (percent):

[-1.200e+00 -1.000e-02 1.332e+01]

[ 2.283e+01 -2.000e-02 2.377e+01]

Deviations from initial guesses for best fit (percent):

[ 7.450e+00 -1.000e-02 1.667e+01]

Choose area to calculate source size.

Box saved at [[170, 258], [965, 1143]]

Box successfully created.

Source size from event 31: 0.1468+-0.0021 mm

Choose an E range for alignment of plots.

Press enter when done:

Limits = [1596.0, 1601.0]

Lowest FWHM fit: [0.73123123 3.78649477] | Highest FWHM fit: [1.19369369 3.7862169 ]

Deviations from initial guesses for worst fit (percent):

[-2.94 0. 6.83]

[ 6.99 -0. 10.11]

Deviations from initial guesses for best fit (percent):

[ 1.32 -0. 8.18]

Choose area to calculate source size.

Box saved at [[163, 254], [1015, 1138]]

Box successfully created.

Source size from event 32: 0.1373+-0.0019 mm

Event| Spec| Gauss| d\_gauss+| d\_gauss-| sigma\_so| d\_so| Doppler d\_dopp| sigma\_sp| d\_sp+| d\_sp-|

1 31 ADP 1.2873 0.4680 0.3193 0.6101 0.0087 None None 1.1335 0.5315 0.3626

2 32 ADP 0.9404 0.2533 0.2092 0.5706 0.0079 None None 0.7475 0.3187 0.2633

**FSSR**

Begin resolution calculation #############################

Lowest FWHM fit: [1.61761762 8.34154959] | Highest FWHM fit: [1.99199199 8.30802393]

Deviations from initial guesses for worst fit (percent):

[-7.370e+00 1.000e-02 8.972e+01]

[-15.08 0.02 4.29]

Deviations from initial guesses for best fit (percent):

[-1.129e+01 2.000e-02 4.888e+01]

Lowest FWHM fit: [1.6011011 3.93992043] | Highest FWHM fit: [1.97547548 3.94706127]

Deviations from initial guesses for worst fit (percent):

[ -5.59 -0. 123.84]

[-11.75 -0. 37.63]

Deviations from initial guesses for best fit (percent):

[-8.69 -0. 83.35]

Event| Spec| Gauss| d\_gauss+| d\_gauss-| sigma\_so| d\_so| Doppler d\_dopp| sigma\_sp| d\_sp+| d\_sp-|

1 2 FSSR 1.7993 0.1927 0.1817 None None 0.474 0.1 1.7357 0.2016 0.1903

2 16 FSSR 1.7773 0.1982 0.1762 None None 0.474 0.1 1.7129 0.2075 0.1849

Ratio R\_int

**Begin relative reflectivity calculation #########################**

**Select limits for E range to integrate over:**

**Press enter when done:**

**Limits = [1583.0, 1608.0]**

**Press enter when done:**

**Limits = [1583.0, 1608.0]**

**R\_int from FSSR (event 16) using theoretical efficiency: 2.752+-0.633 vs. R\_lit = 53.6**

**R\_int ratio results for event 16**

**Experimental R\_int ratio (FSSR/KAP): 0.062+-0.015**

**Theoretical R\_int ratio (FSSR/KAP): 0.67**

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**Begin relative reflectivity calculation #########################**

**Select limits for E range to integrate over:**

**Press enter when done:**

**Limits = [1584.0, 1610.0]**

**Press enter when done:**

**Limits = [1584.0, 1610.0]**

**R\_int ratio results for event 19**

**Experimental R\_int ratio (ADP/KAP): 0.892+-0.047**

**Theoretical R\_int ratio (ADP/KAP): 0.5**

**Select limits for E range to integrate over:**

**Press enter when done:**

**Limits = [1584.0, 1610.0]**

**Press enter when done:**

**Limits = [1584.0, 1610.0]**

**R\_int ratio results for event 19**

**Experimental R\_int ratio (ADP/KAP): 0.781+-0.041**

**Theoretical R\_int ratio (ADP/KAP): 0.5**

**Conversion efficiency**

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Begin conversion efficiency calculation #########################

Select line for the conversion efficiency:

Press enter when done:

Limits = [1593.0, 1608.0]

Select line for the conversion efficiency:

Press enter when done:

Limits = [1593.0, 1608.0]

Event Spec E of line [eV] CE [-] d\_CE

0 19 ADP 1598.24 0.045046 0.022542

1 19 ADP 1598.404 0.037604 0.018816

**SUCC**

Begin conversion efficiency calculation #########################

Select line for the conversion efficiency:

Press enter when done:

Limits = [1592.5, 1610.0]

Select line for the conversion efficiency:

Press enter when done:

Limits = [1592.5, 1610.0]

Event Spec E of line [eV] CE [-] d\_CE

0 16 KAP 1598.402 0.025517 0.012831

1 19 KAP 1598.202 0.027101 0.01362

FSSR

Begin conversion efficiency calculation #########################

Select line for the conversion efficiency:

Press enter when done:

Limits = [1592.5, 1605.0]

CE from FSSR (event 16) using theoretical efficiency: 0.03889+-0.00283

Event Spec E of line [eV] CE [-] d\_CE

0 16 FSSR 1598.4 0.001988 0.001005