Supplementary Information

Detection and Quantification of Trace Technetium in the Presence of Molybdenum Using Laser-Induced Breakdown Spectroscopy

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- Sample preparation schematic
- Multichannel univariate calibration curves
- CZ ICCD univariate calibration curves
- Survey of Tc emissions at trace concentrations in Mo matrix
- Survey of concentrated Tc emissions on Si substrate

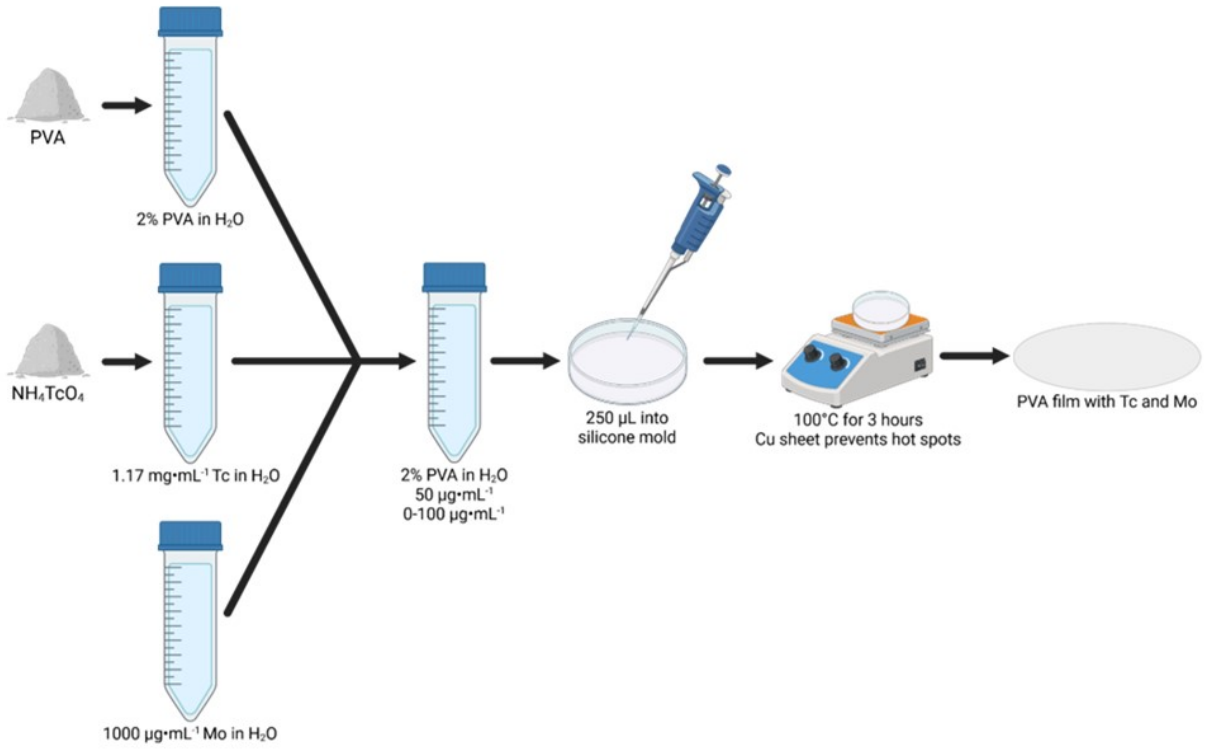


Figure S1. Diagram of the aqueous sample preparation and subsequent PVA film conversion.

Multichannel spectrometer Tc calibrations

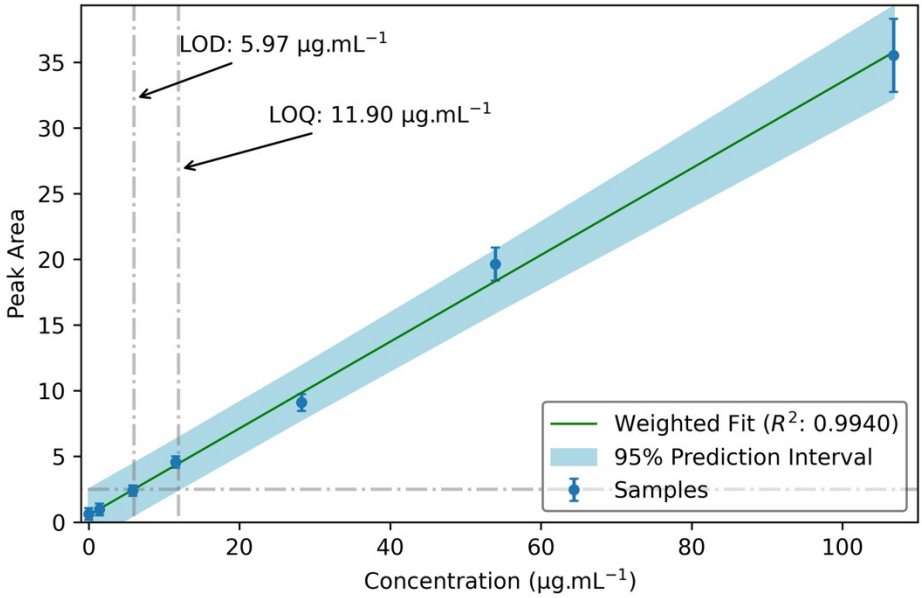


Figure S2. Tc calibration curve based on the 254.32 nm emission peak using the multichannel spectrometer.

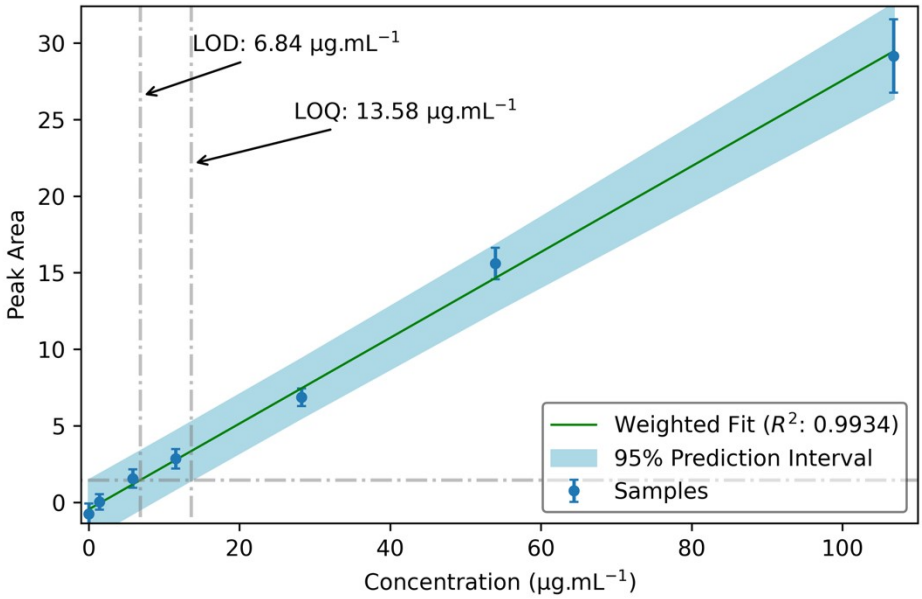


Figure S3. Tc calibration curve based on the 260.99 nm emission peak using the multichannel spectrometer.

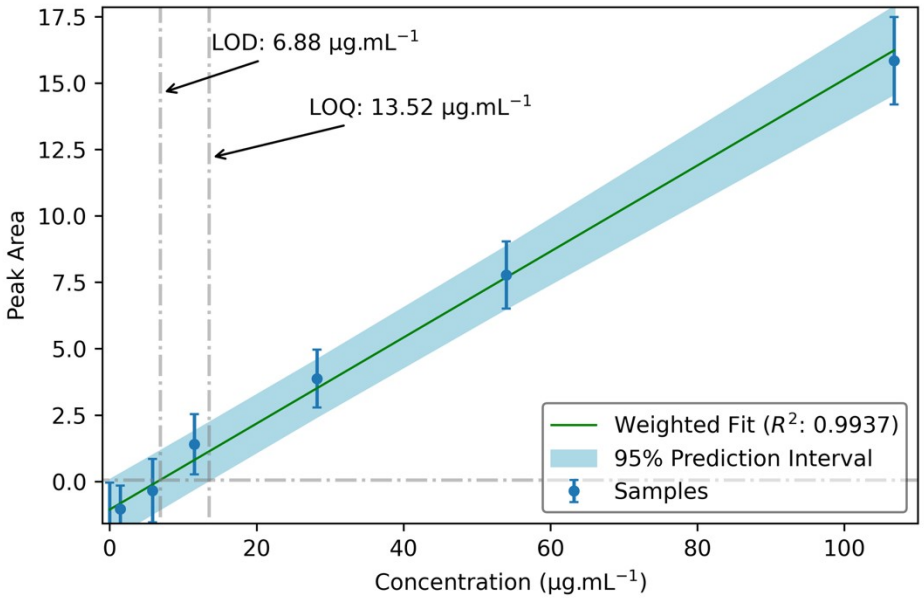


Figure S4. Tc calibration curve based on the 363.61 nm emission peak using the multichannel spectrometer.

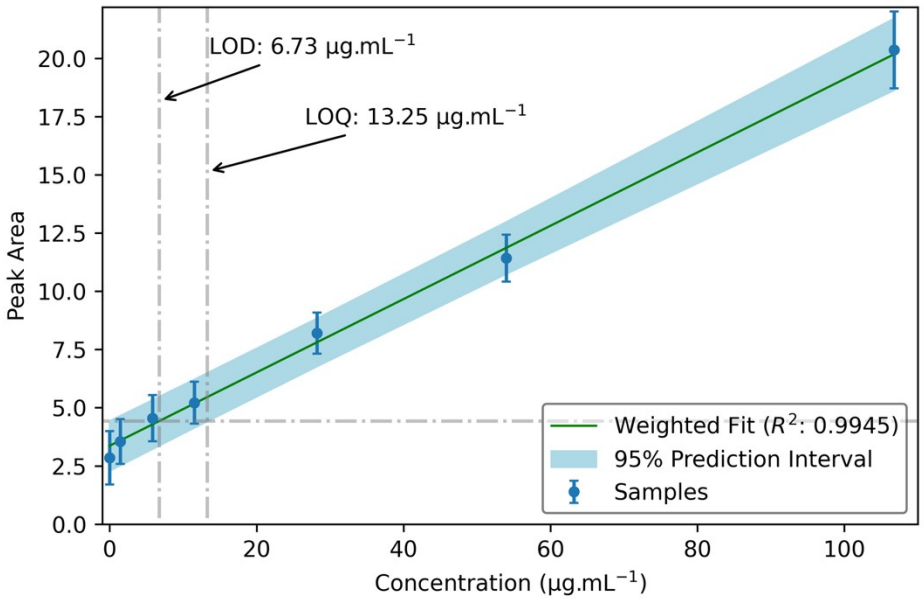


Figure S5. Tc calibration curve based on the 403.16 nm emission peak using the multichannel spectrometer.

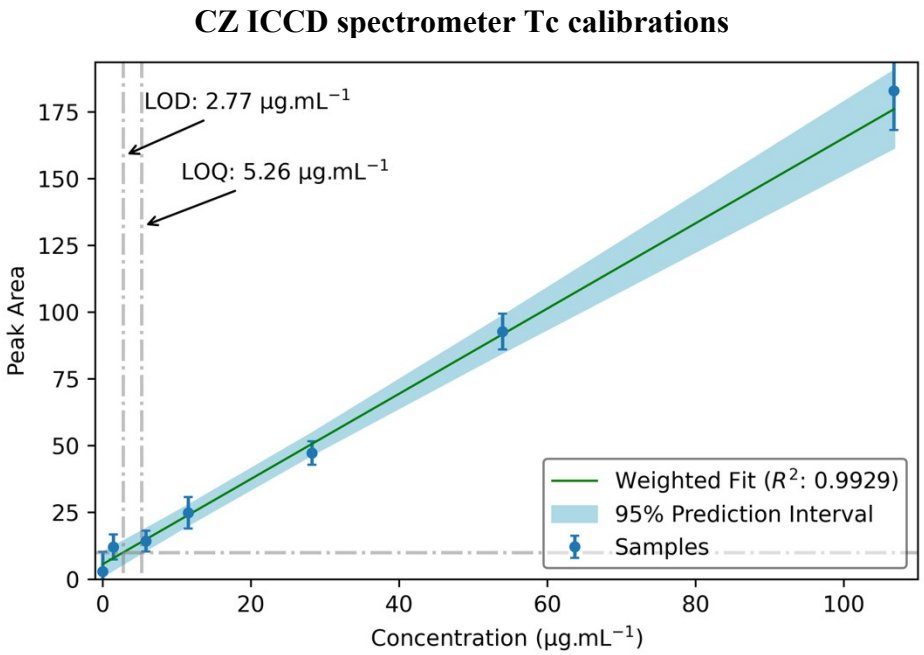


Figure S6. Tc calibration curve based on the 398.49 nm emission peak using the CZ ICCD spectrometer.

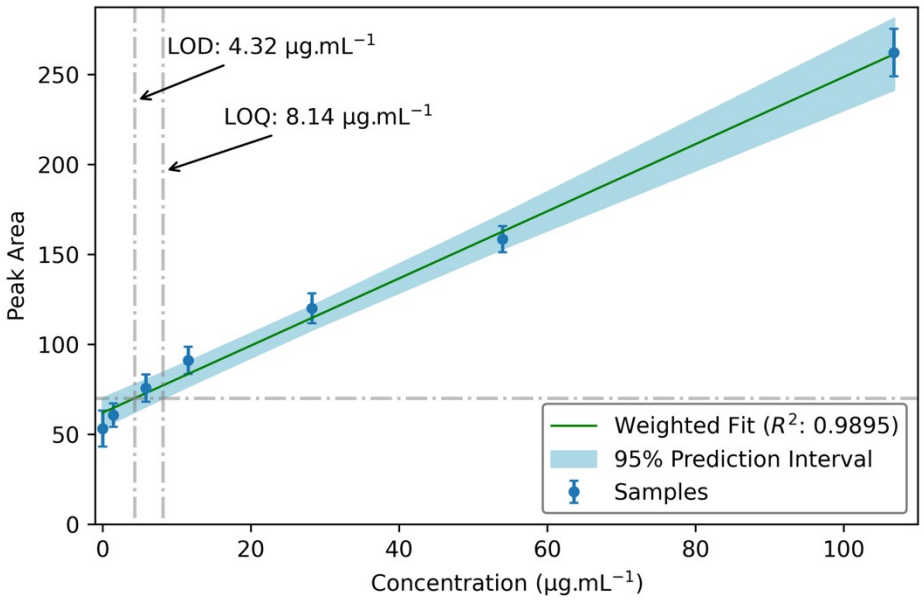


Figure S7. Tc calibration curve based on the 404.91 nm emission peak using the CZ ICCD spectrometer.

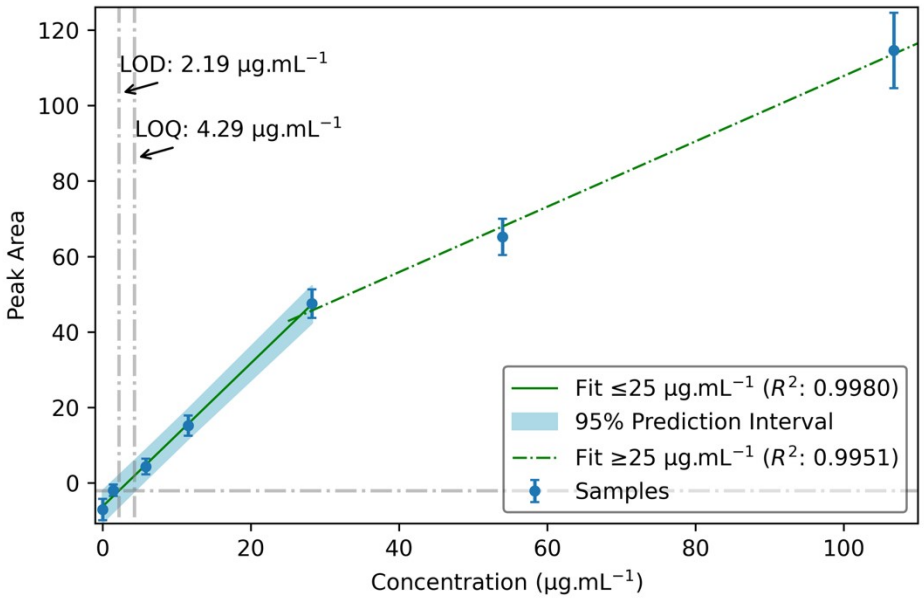


Figure S8. Tc calibration curve based on the 321.20 nm emission peak using the CZ ICCD spectrometer.

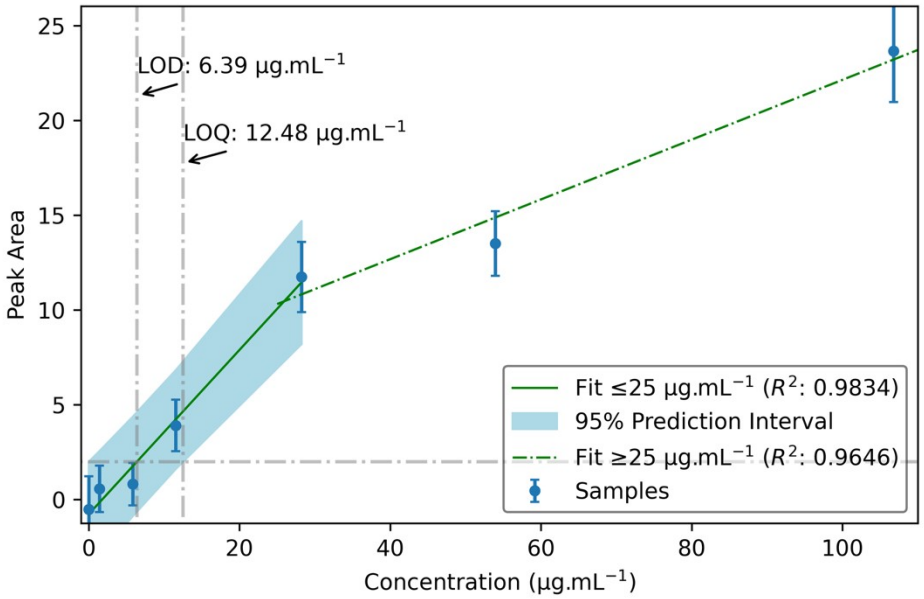
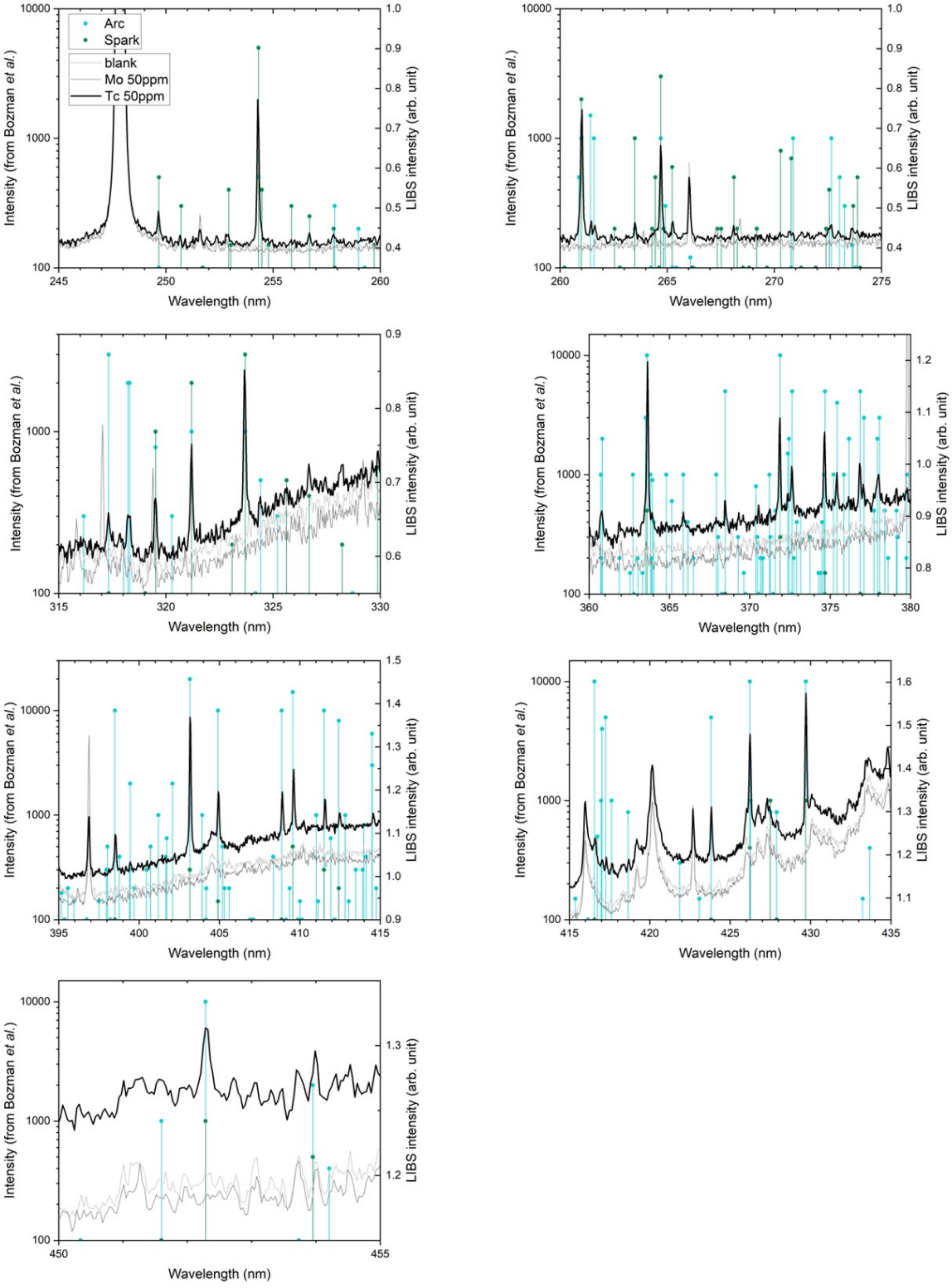
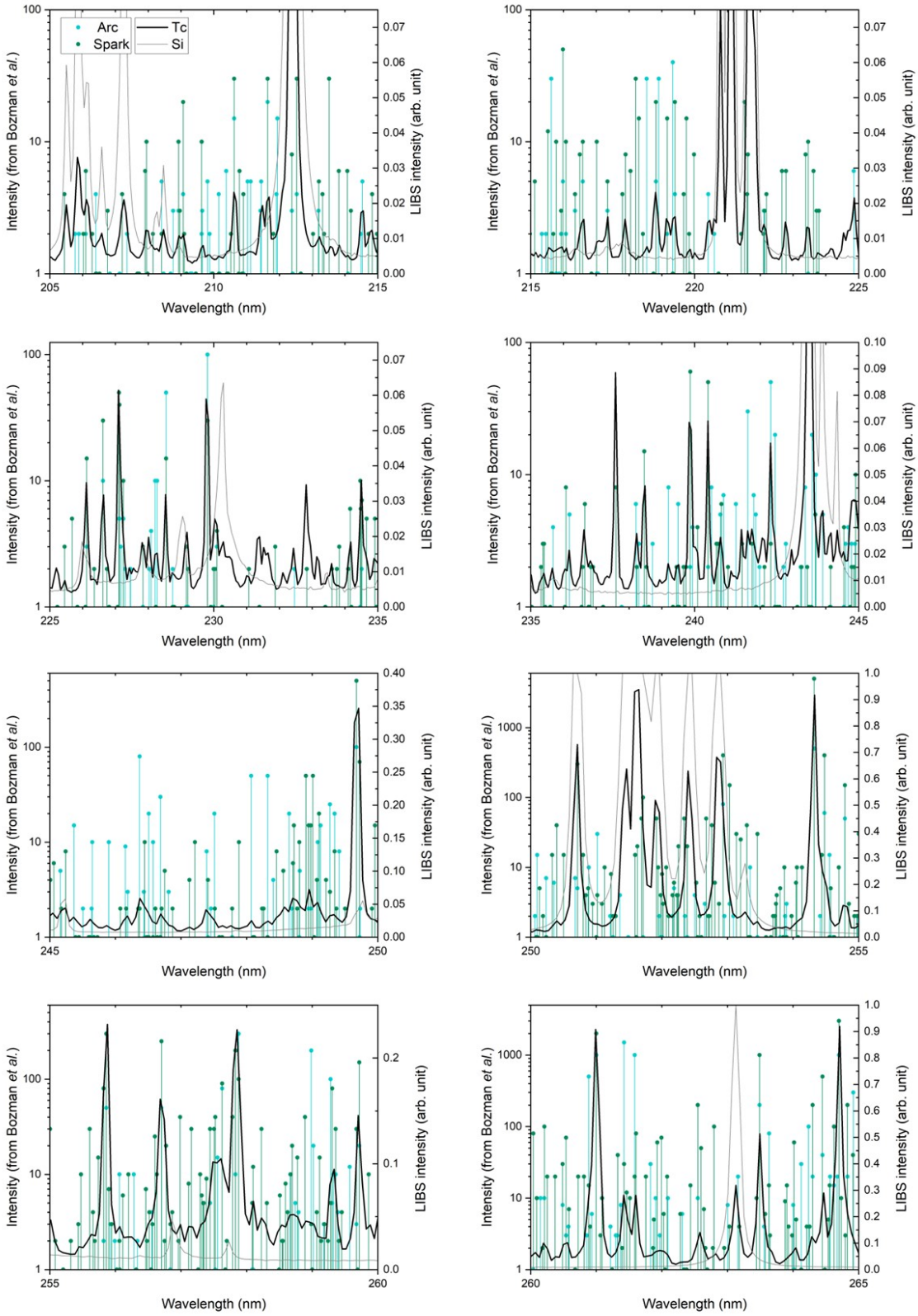


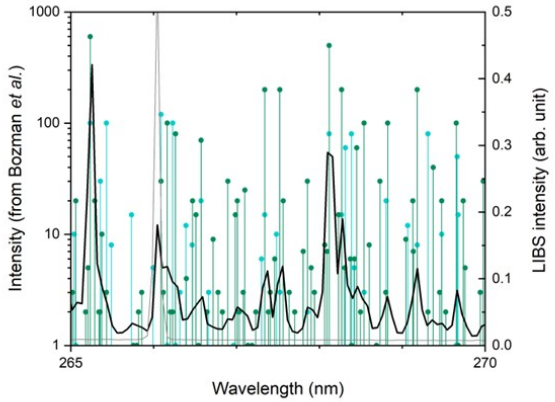
Figure S9. Tc calibration curve based on the 328.20 nm emission peak using the CZ ICCD spectrometer.

Survey of Tc emissions at trace concentrations in Mo matrix



Survey of concentrated Tc emissions on Si substrate

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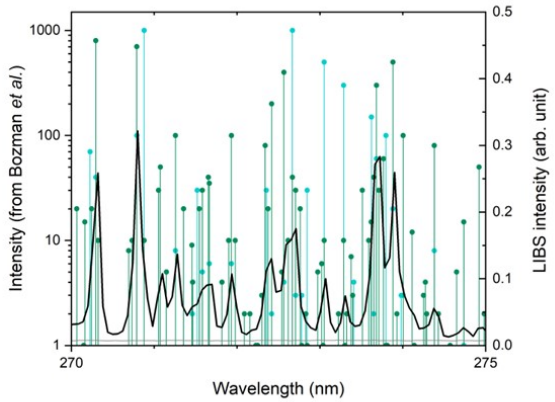
0.4
0.3
0.2
0.1
0.0
265
270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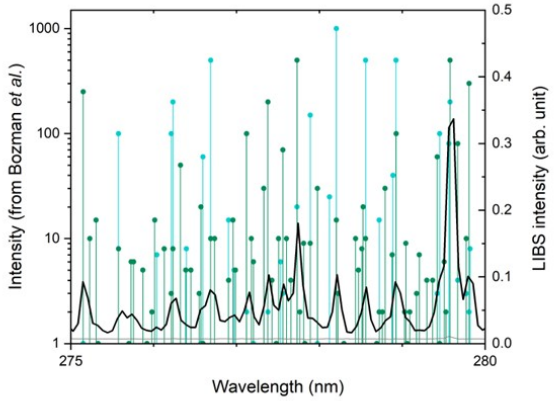
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LIBS intensity (arb. unit)
Wavelength (nm)
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0.5
0.4
0.3
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0.0
275
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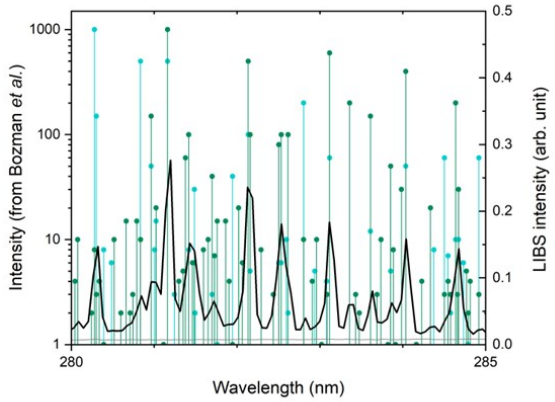
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0.0
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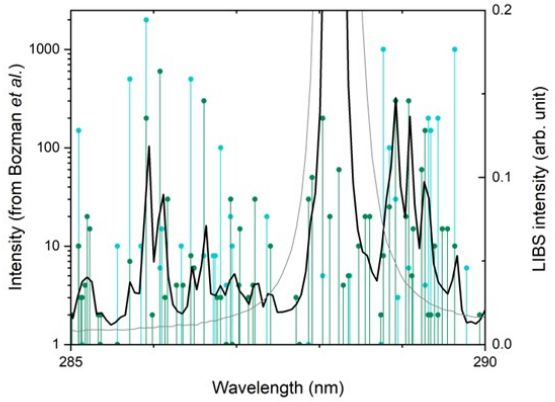
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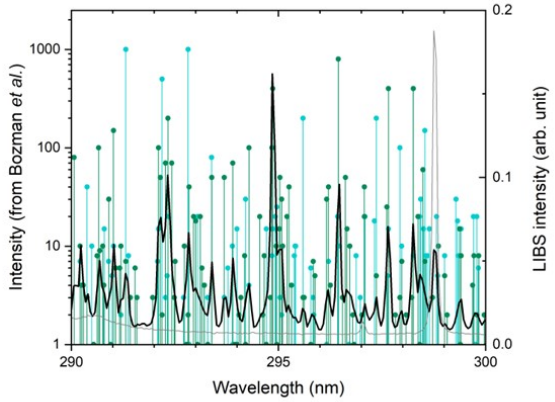
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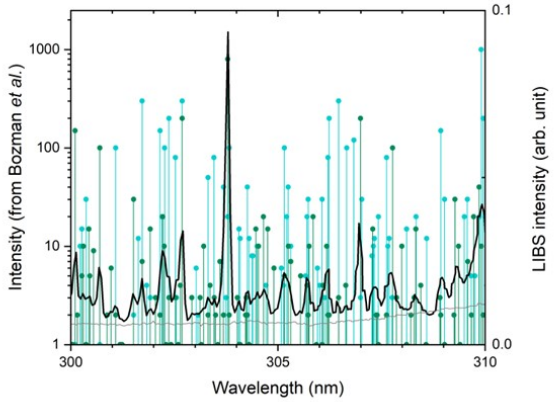
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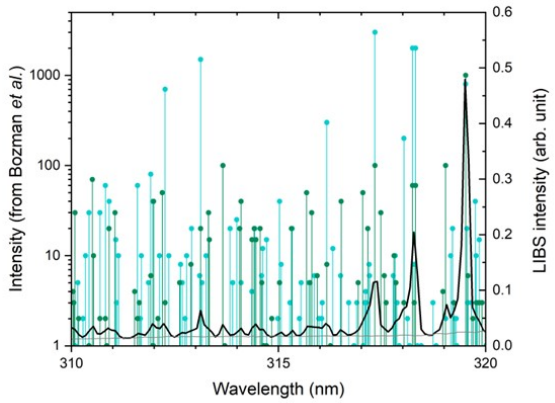
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315
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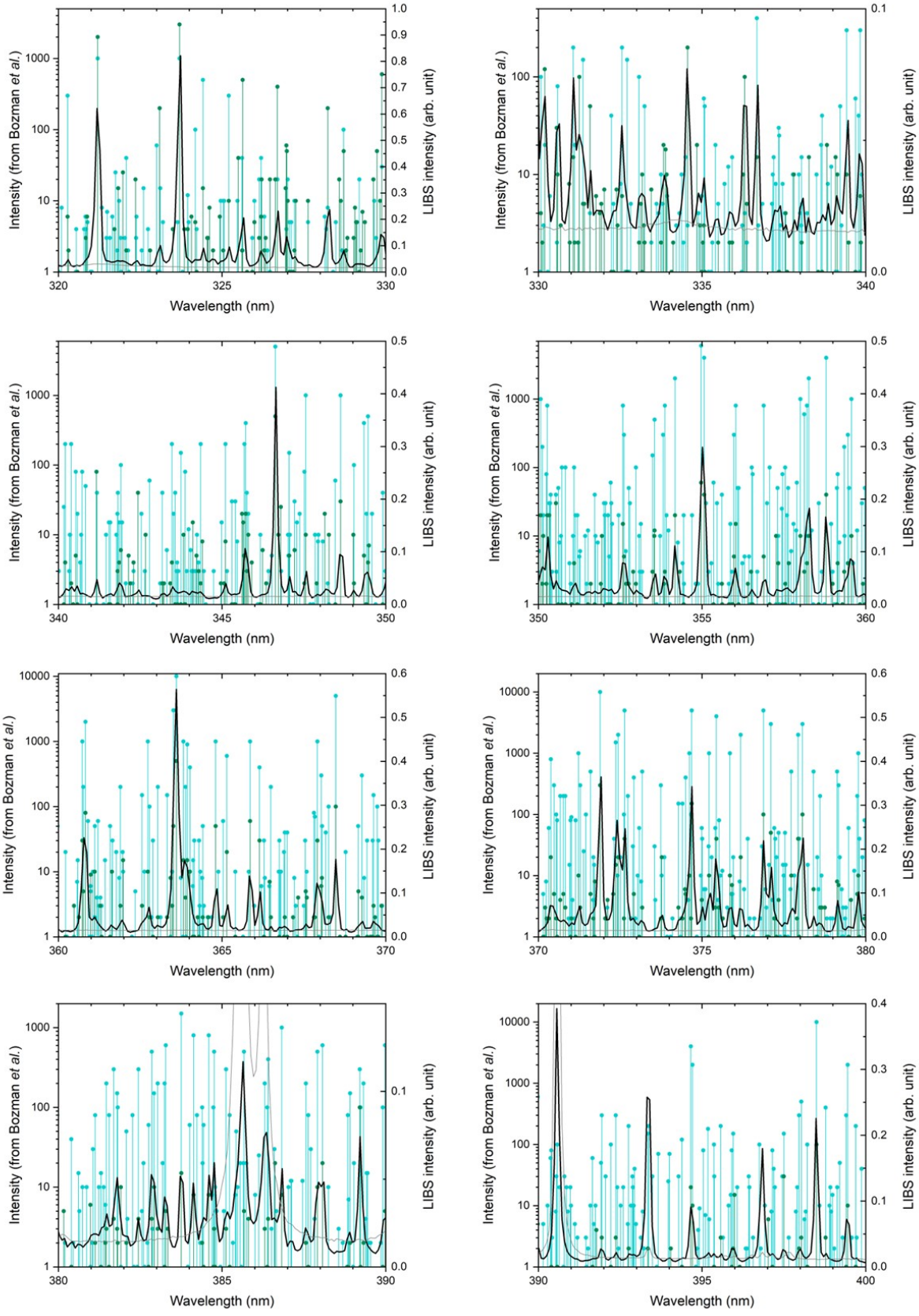
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LIBS intensity (arb. unit)
Wavelength (nm)
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330
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390
390
395
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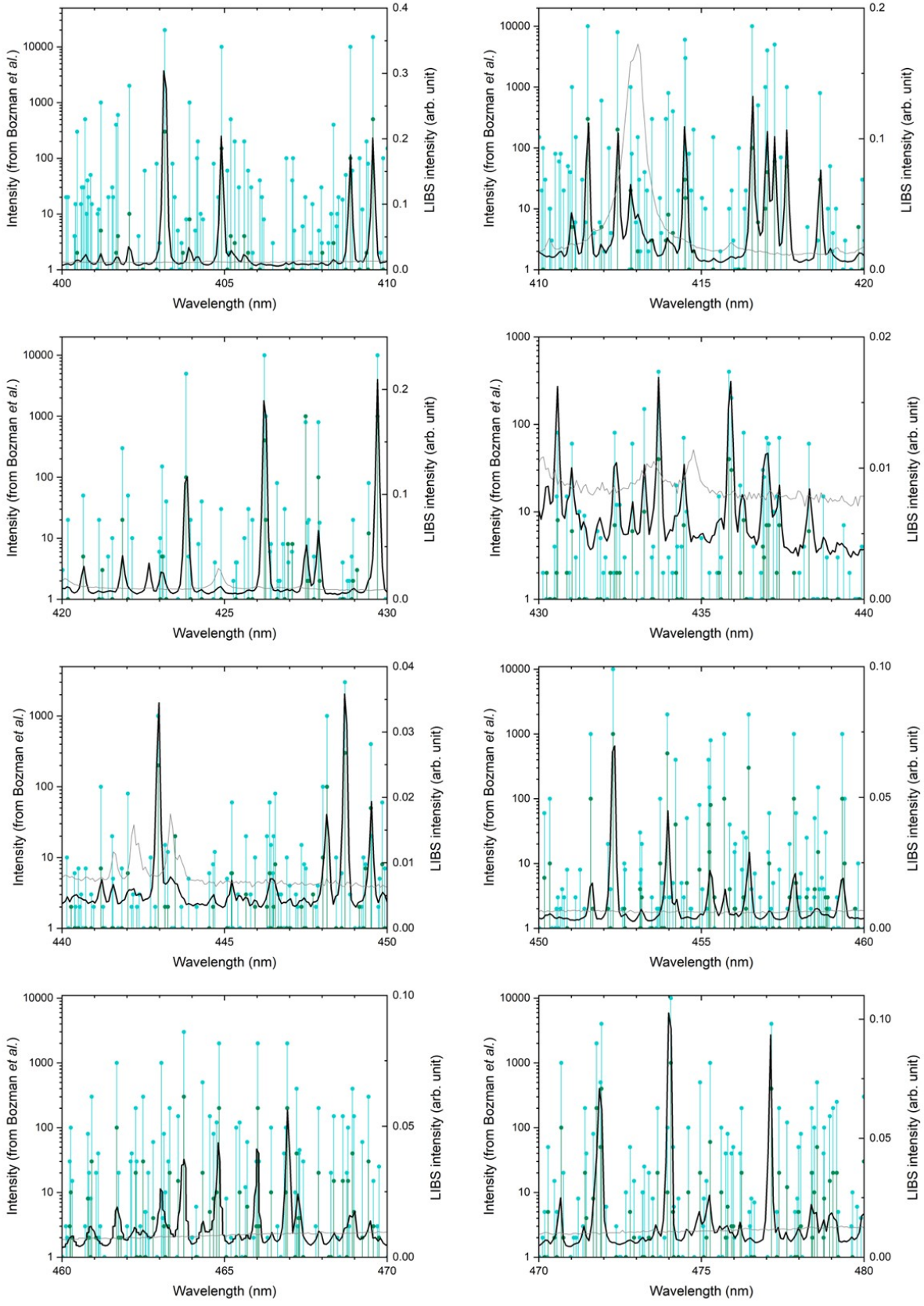
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LIBS intensity (arb. unit)
Wavelength (nm)
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420
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450
455
460
465
470
475
480
1
10
100
1000
10000
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0.4
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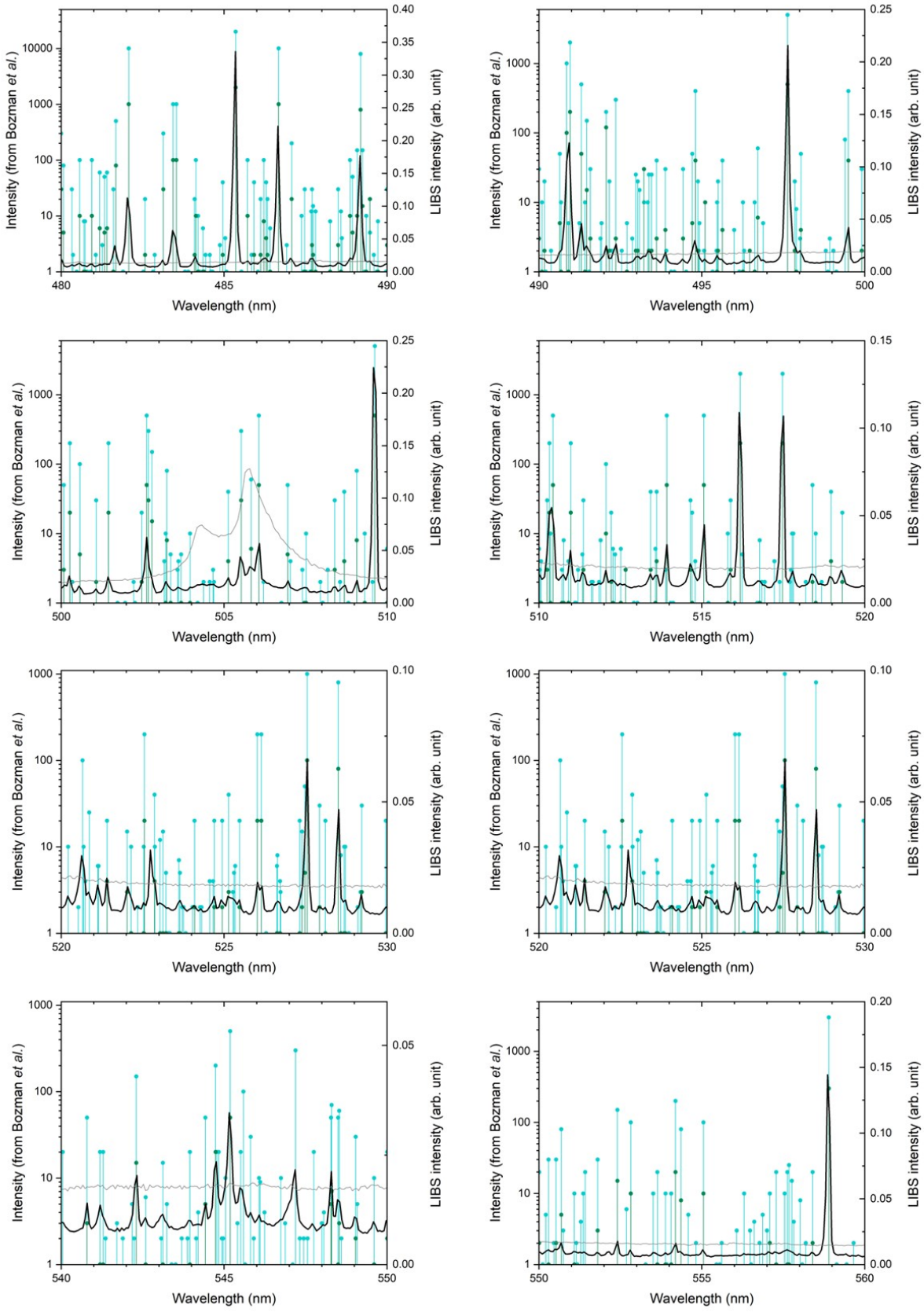
0.02
0.03
0.04
0.05
0.10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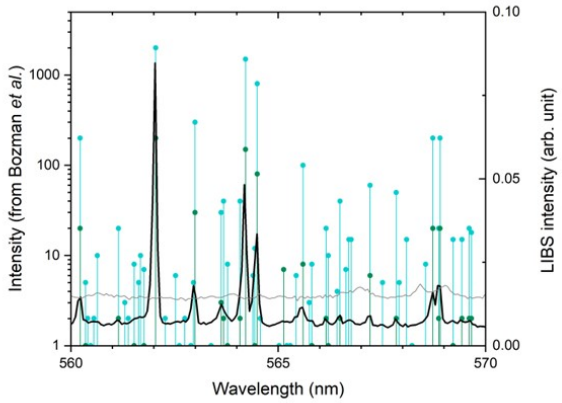
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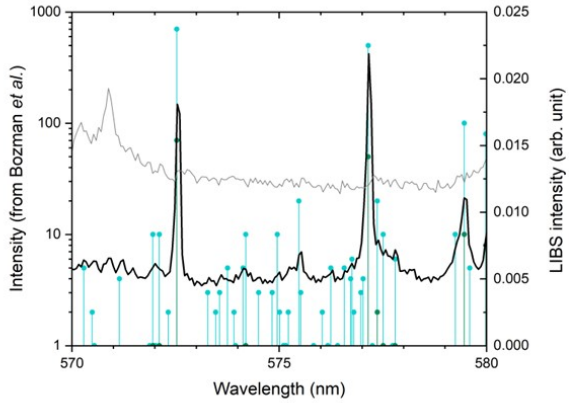
0.05
0.10
560
565
570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LIBS intensity (arb. unit)
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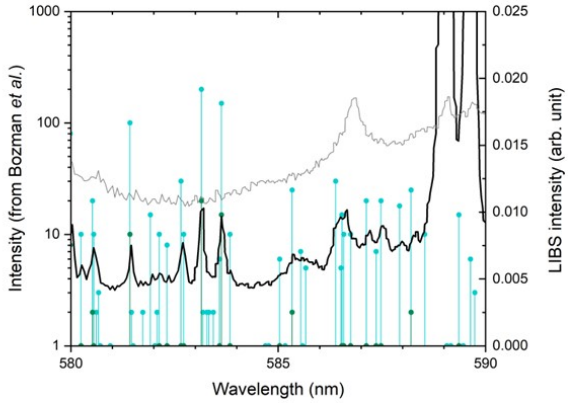
0.015
0.020
0.025
570
575
580


Intensity (from Bozman *et al.*)
LIBS intensity (arb. unit)
Wavelength (nm)
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0.025
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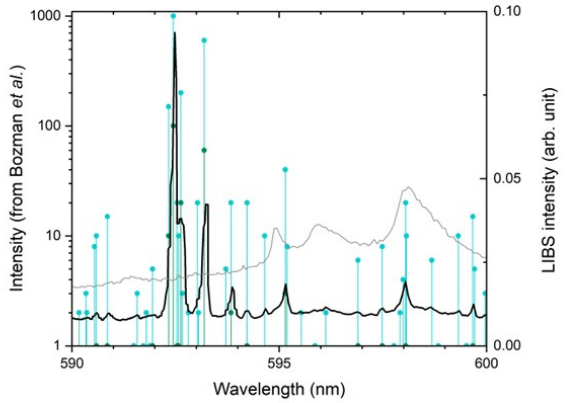
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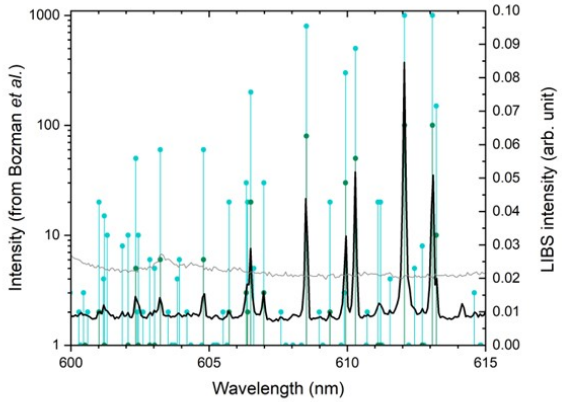
Intensity (from Bozman *et al.*)
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0.07
0.08
0.09
0.10
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605
610
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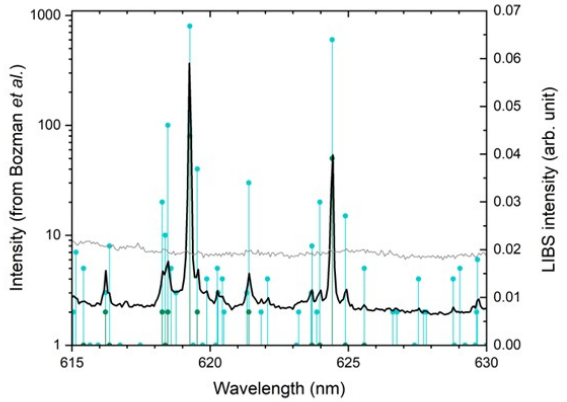
Intensity (from Bozman *et al.*)
LIBS intensity (arb. unit)
Wavelength (nm)
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0.06
0.07
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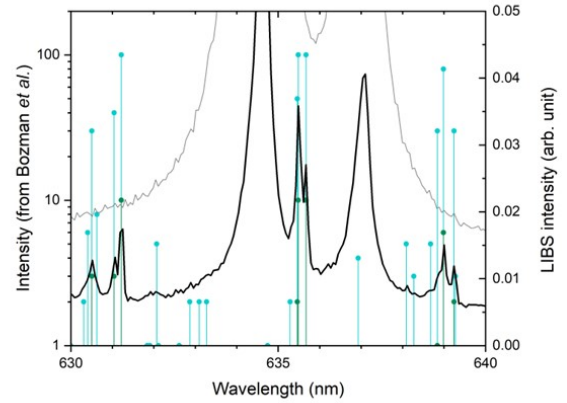
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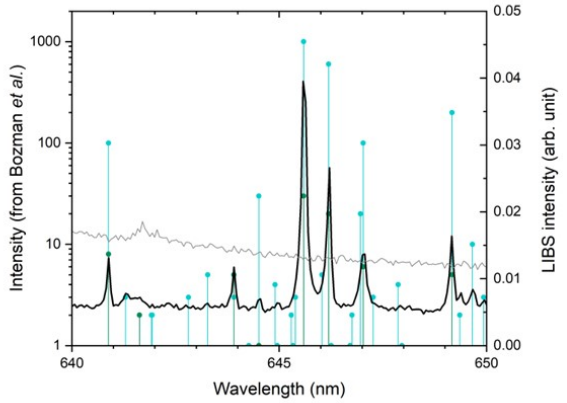
Intensity (from Bozman *et al.*)
LIBS intensity (arb. unit)
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0.03
0.04
0.05
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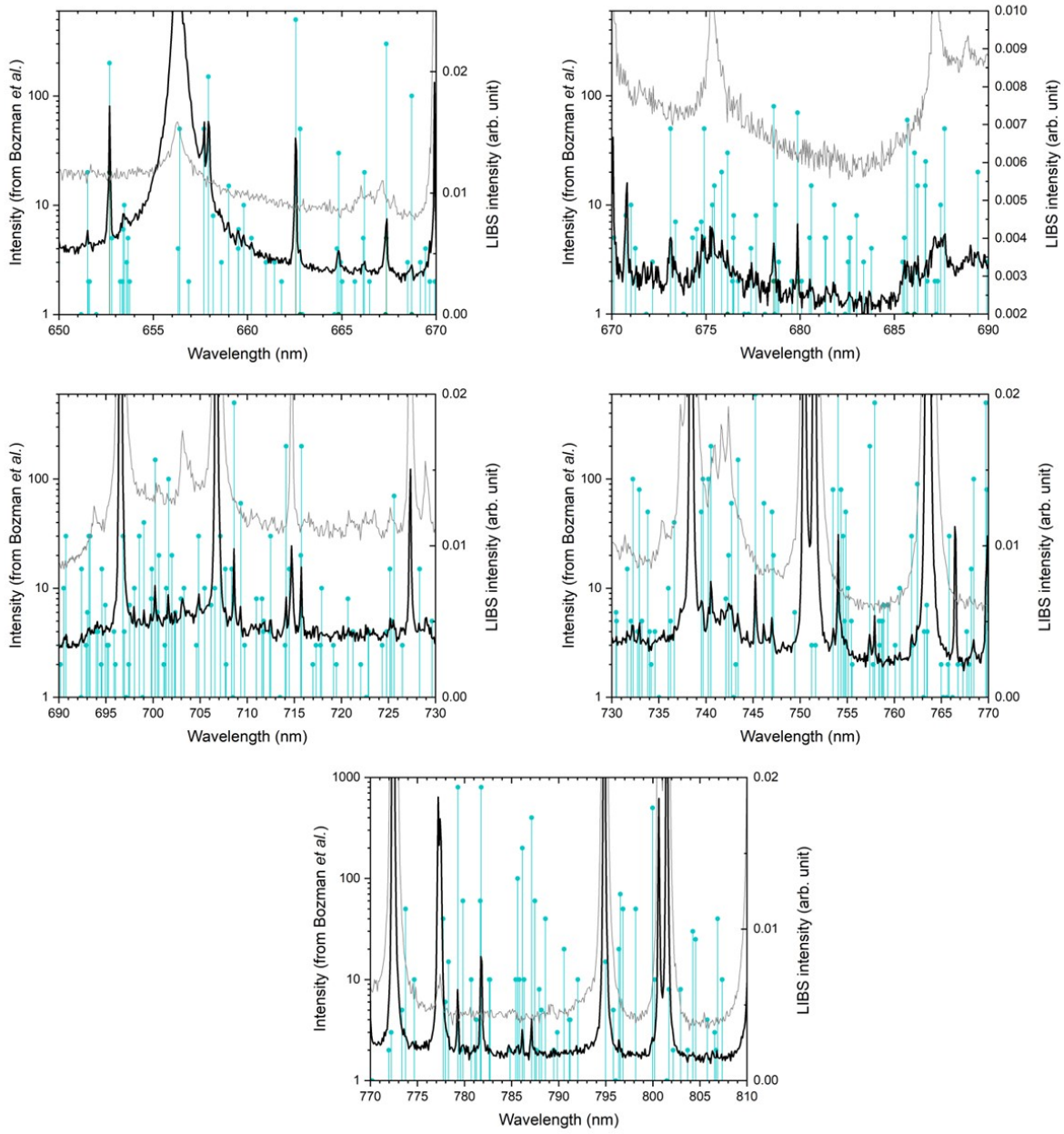
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LIBS intensity (arb. unit)
Wavelength (nm)
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690 695 700 705 710 715 720 725 730
730 735 740 745 750 755 760 765 770
770 775 780 785 790 795 800 805 810
1 10 100 1000
0.00 0.01 0.02
0.002 0.003 0.004 0.005 0.006 0.007 0.008 0.009 0.010