

Figure S1:

Zircon cathodoluminescence (CL) images, organized alphanumerically by sample, and labeled with Laser Ablation-Inductively Coupled Plasma Mass Spectrometry (LA-ICPMS) analysis spot numbers (see table S1) and Chemical Abrasion-Thermal Ionization Mass Spectrometry (CA-TIMS) analysis grain numbers (see table 1).

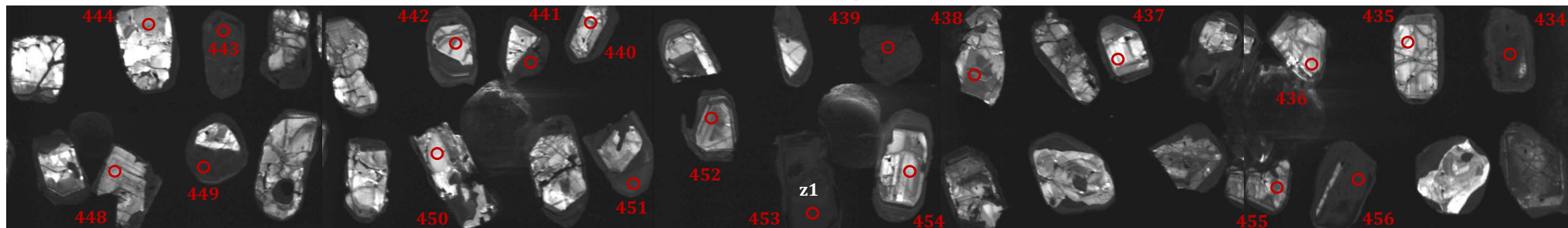
○ = 25 micron diameter laser ablation pit

Figure 1 displays 12 grayscale photographs of mineral specimens, each labeled with a red number and a red circle indicating a specific feature or inclusion. The specimens are arranged in two rows of six. The top row shows specimens 415, 416, 417, 418, 422, and 423. The bottom row shows specimens 424, 425, 426, and three unlabeled specimens. The specimens exhibit various shapes and textures, including crystalline forms and inclusions.

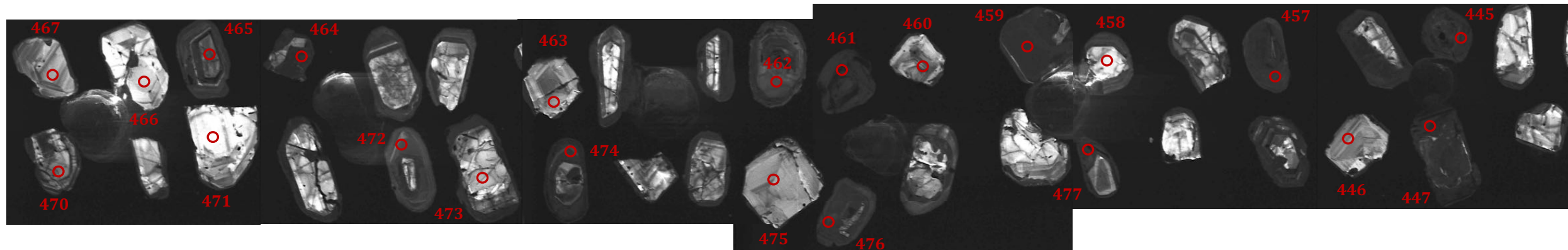
○ = 25 micron diameter laser ablation pit

B1548A zircon
Cathodoluminescence (CL) images

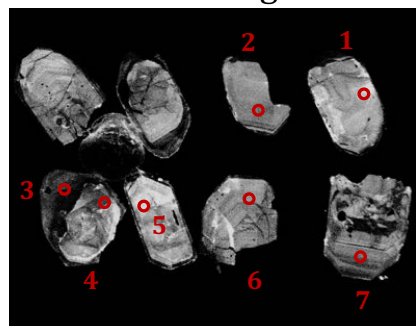
Medium Row 1



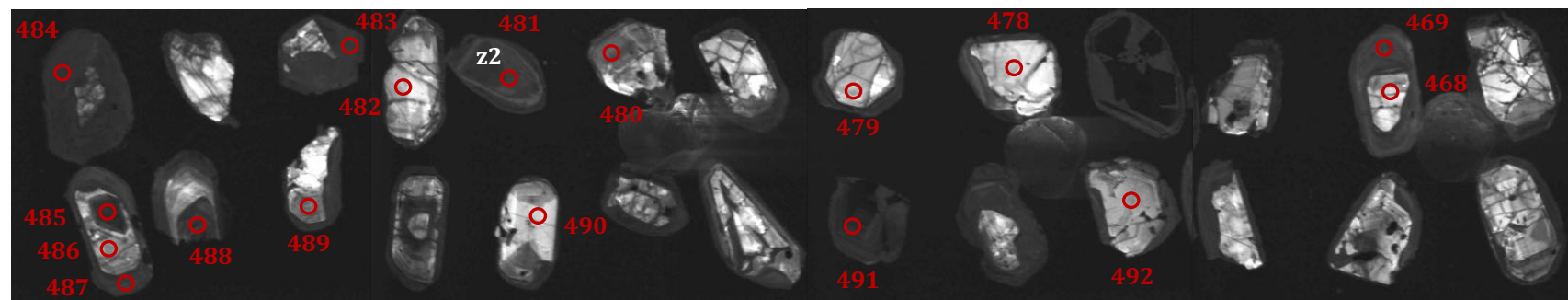
Medium Row 1 continued



Large Row 1



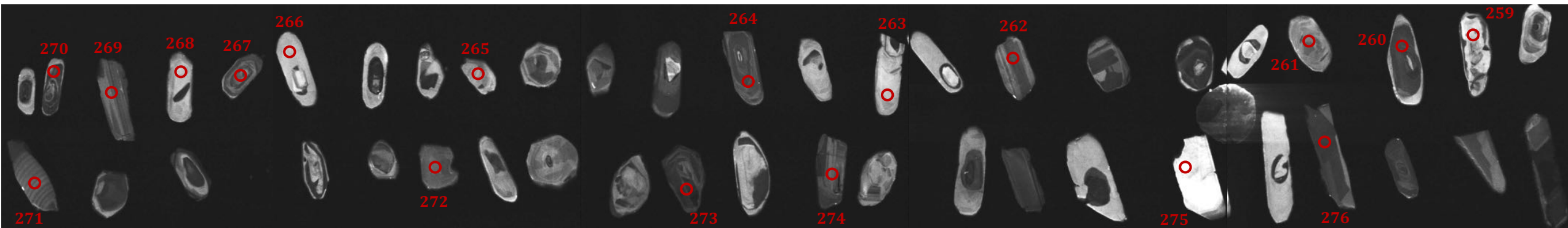
Medium Row 1 continued



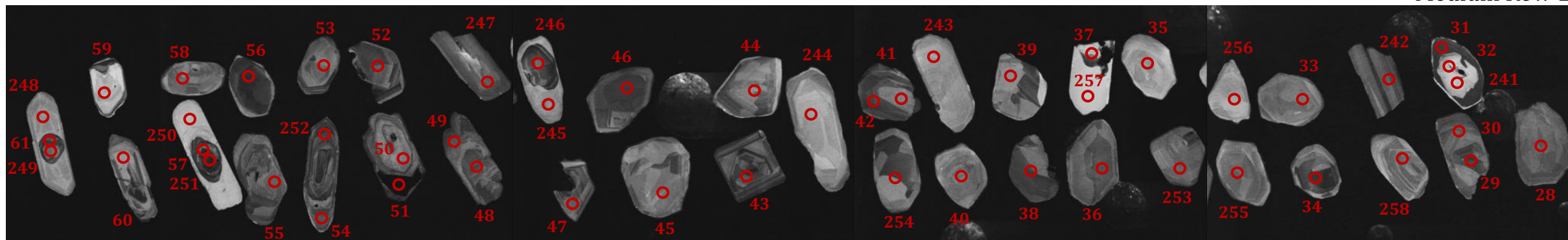
○ = 25 micron diameter laser ablation pit

B1548B zircon Cathodoluminescence (CL) images

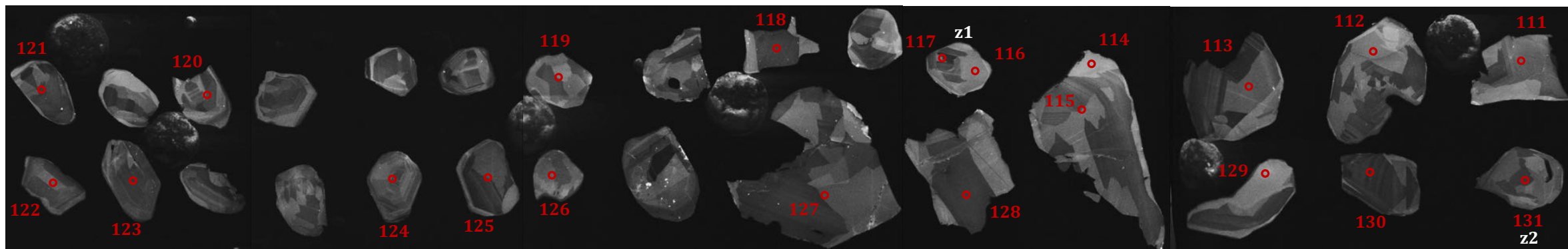
Small Row 1



Medium Row 1

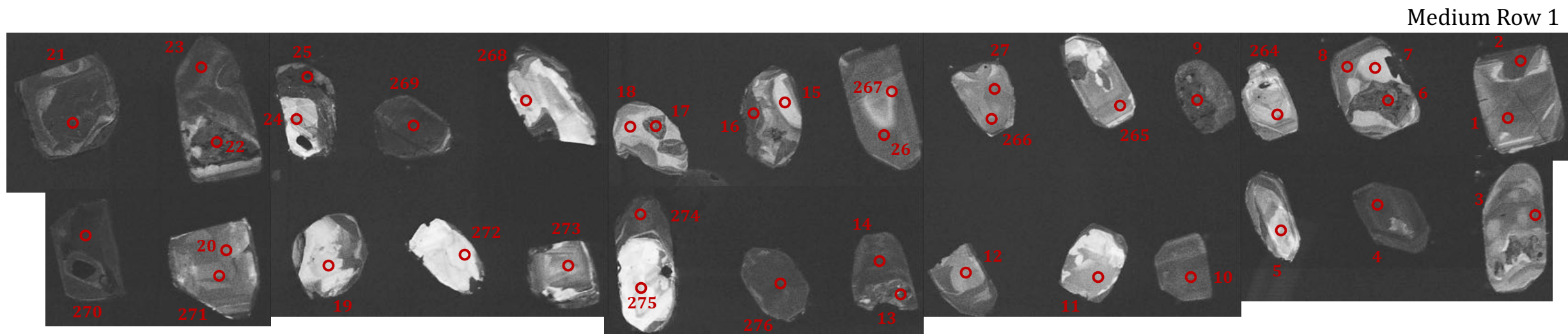
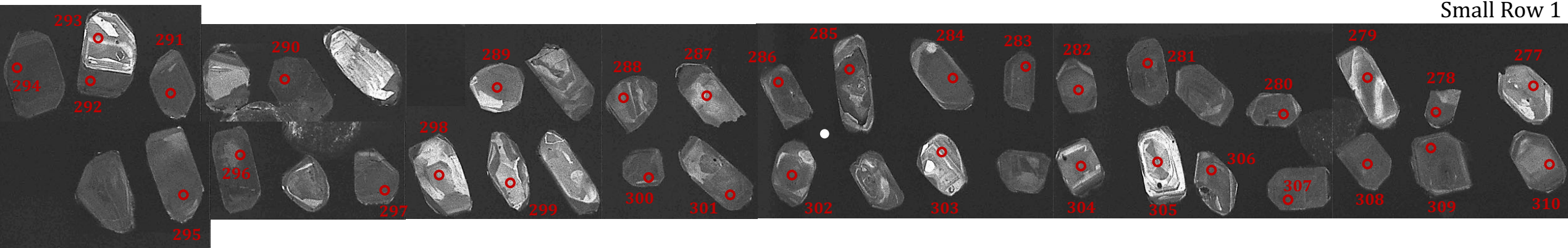


XL Row 1



○ = 25 micron
diameter laser
ablation pit

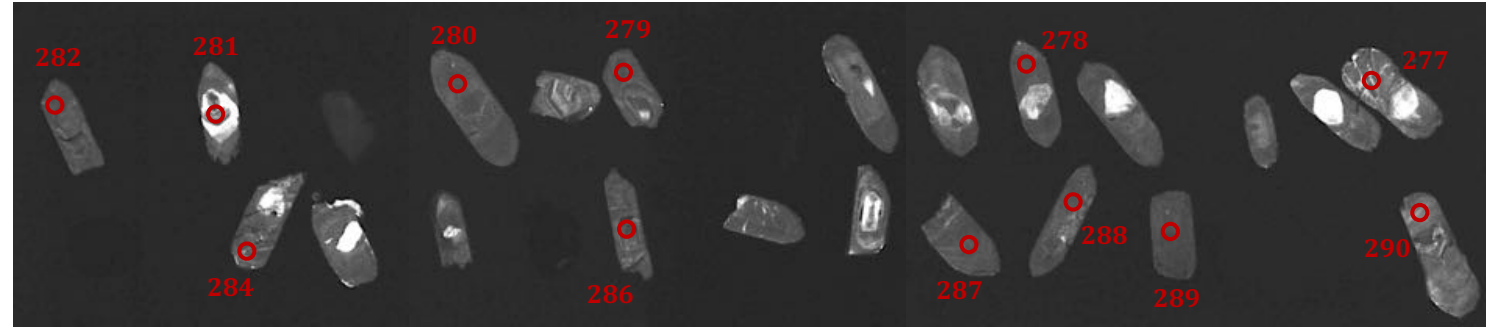
B1549 zircon
Cathodoluminescence (CL) images



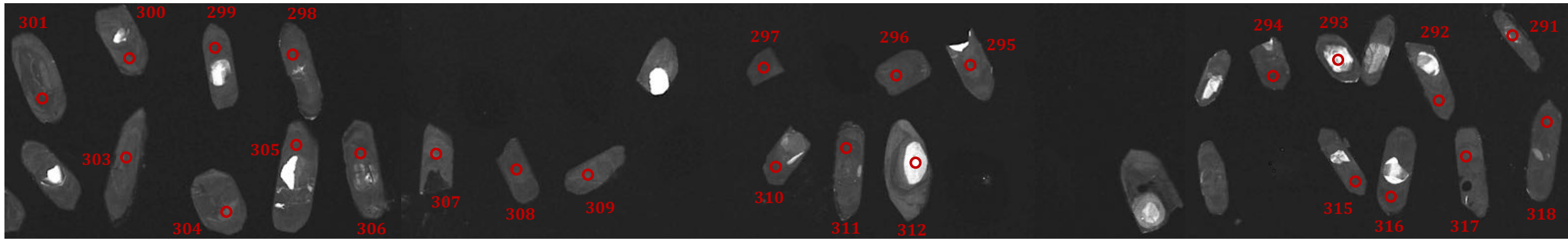
B1550 zircon
Cathodoluminescence (CL) images

Small Row 1

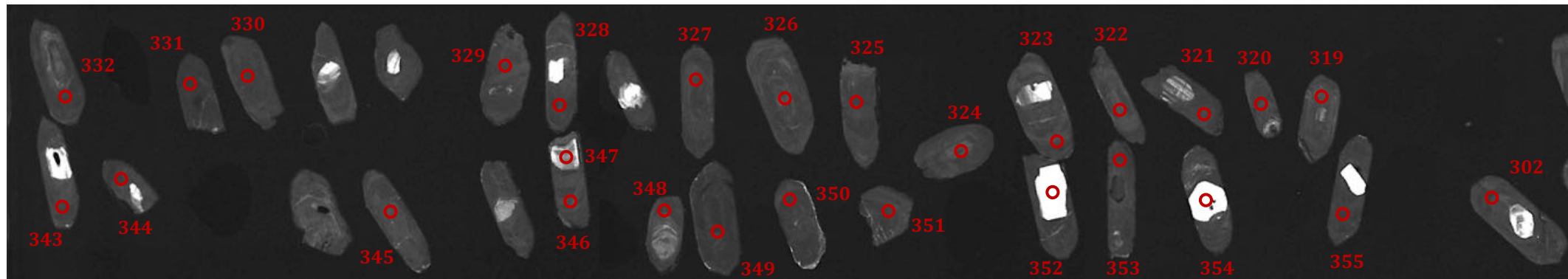
○ = 25 micron
diameter laser
ablation pit



Small Row 2



Small Row 2 continued

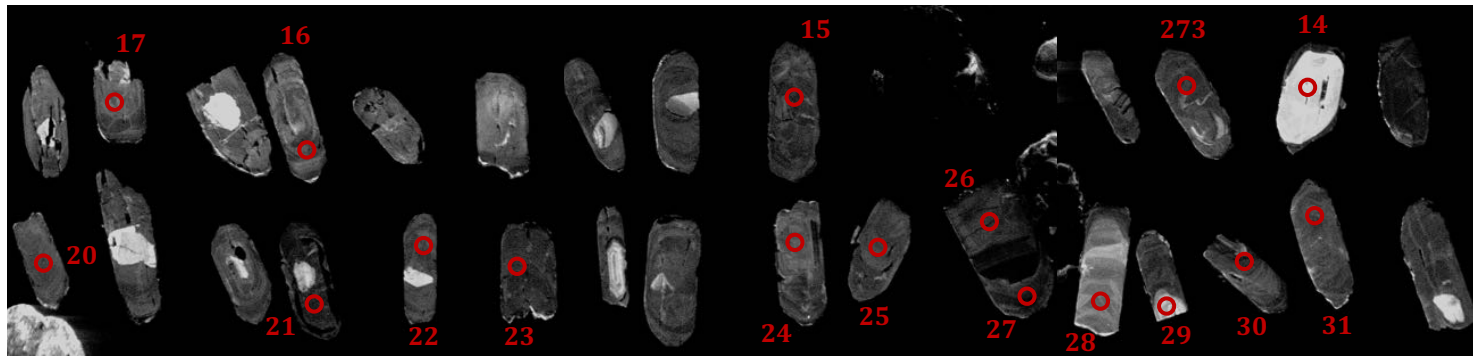


B1550 zircon

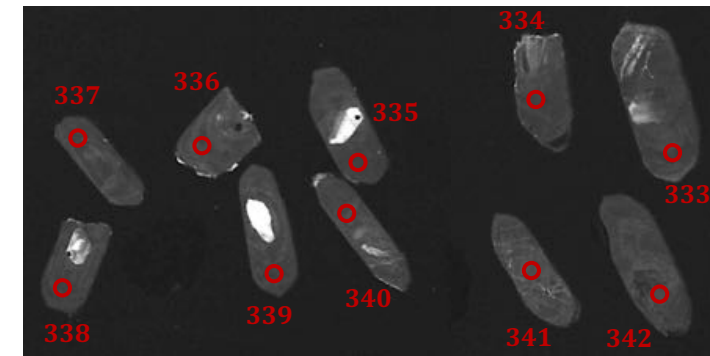
○ = 25 micron diameter laser ablation pit

Cathodoluminescence (CL) images

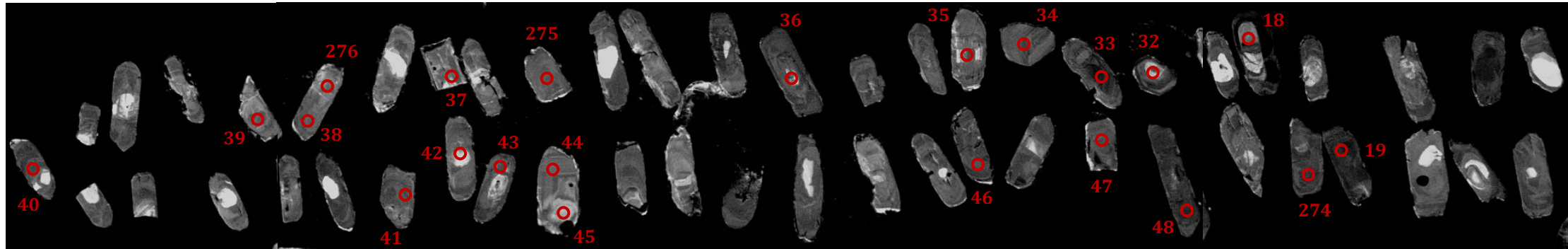
Small Row 3



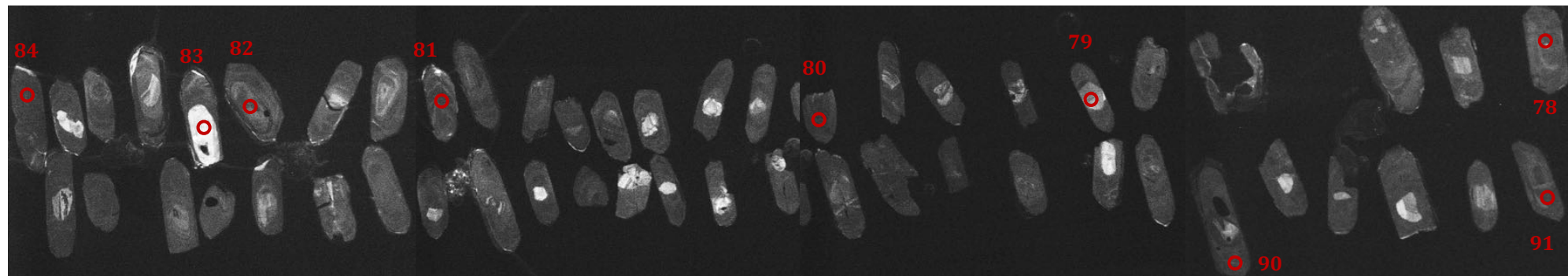
Small Row 2 continued



Small Row 3 continued

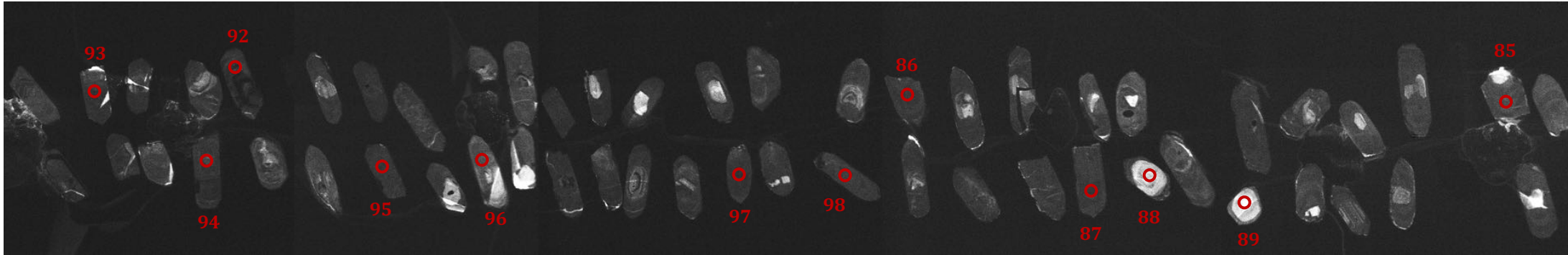


Small Row 4

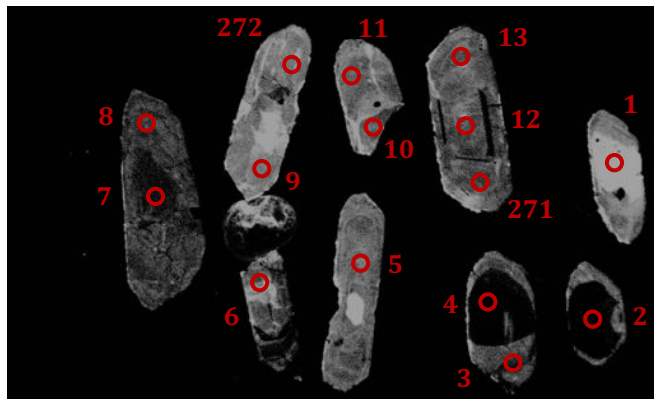


B1550 zircon
Cathodoluminescence (CL) images

Small Row 4



Medium row 1

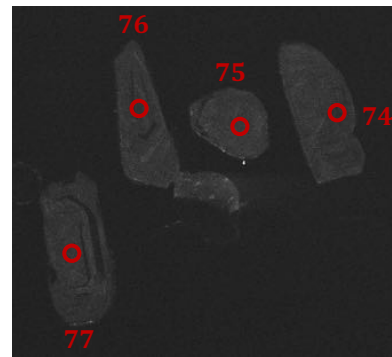


Medium row 2

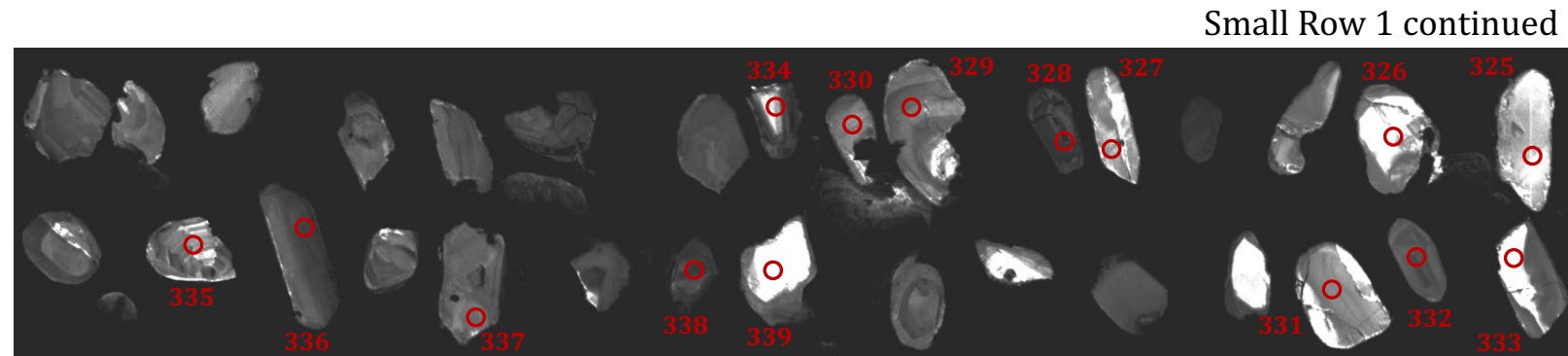
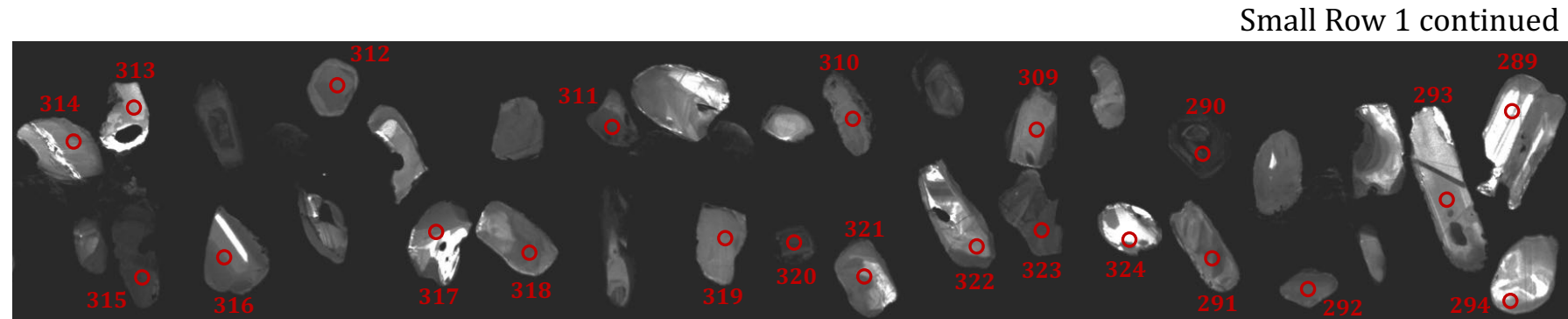
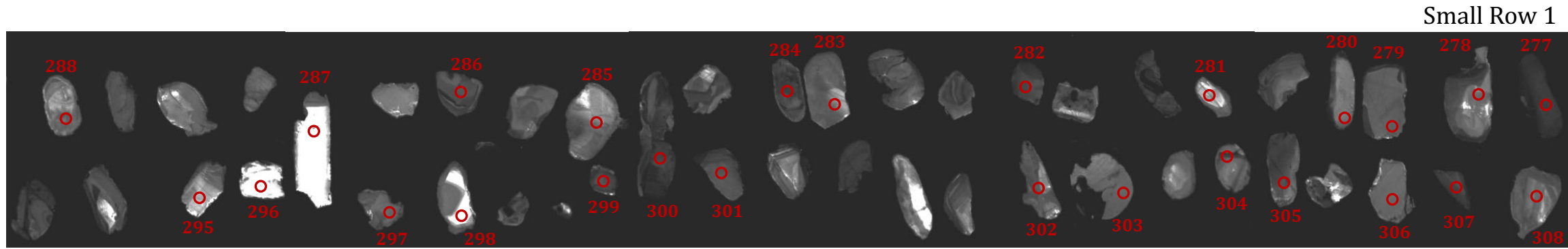


○ = 25 micron
diameter laser
ablation pit

Small Row 5

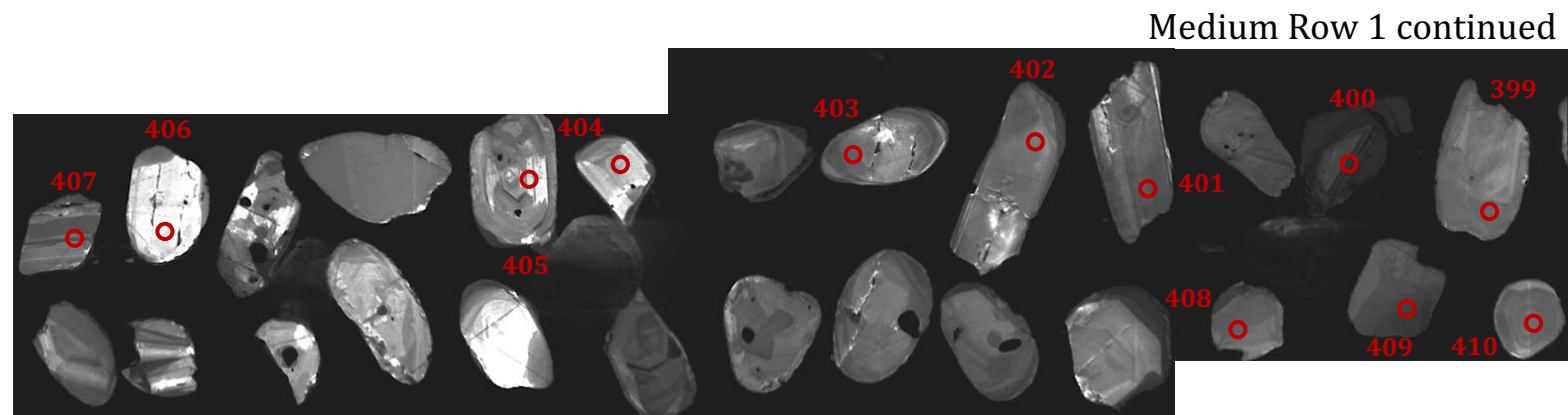
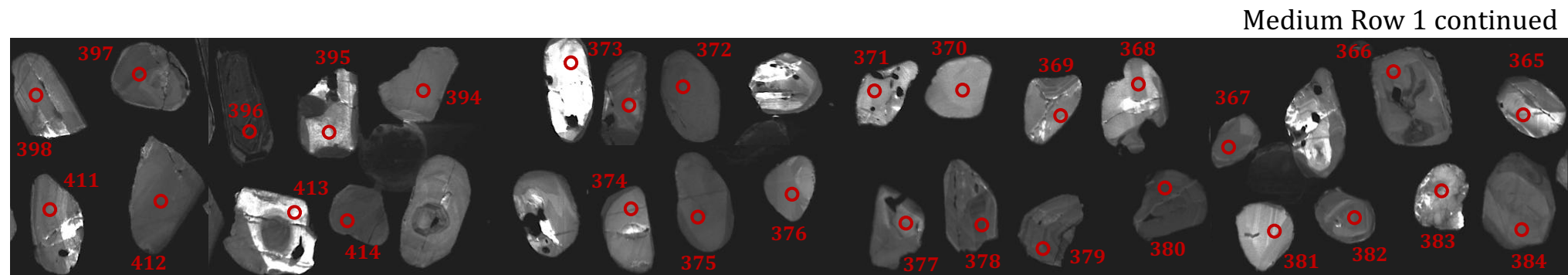
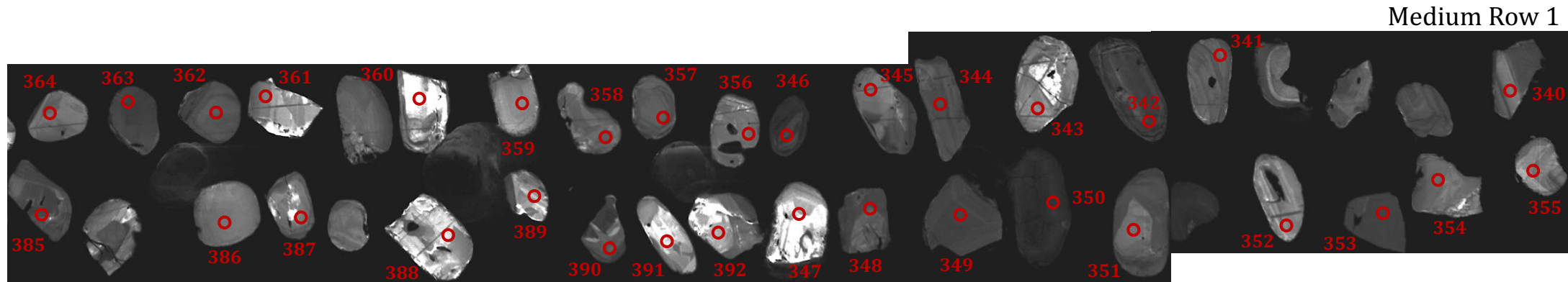


B1551 zircon
Cathodoluminescence (CL) images



○ = 25 micron diameter
laser ablation pit

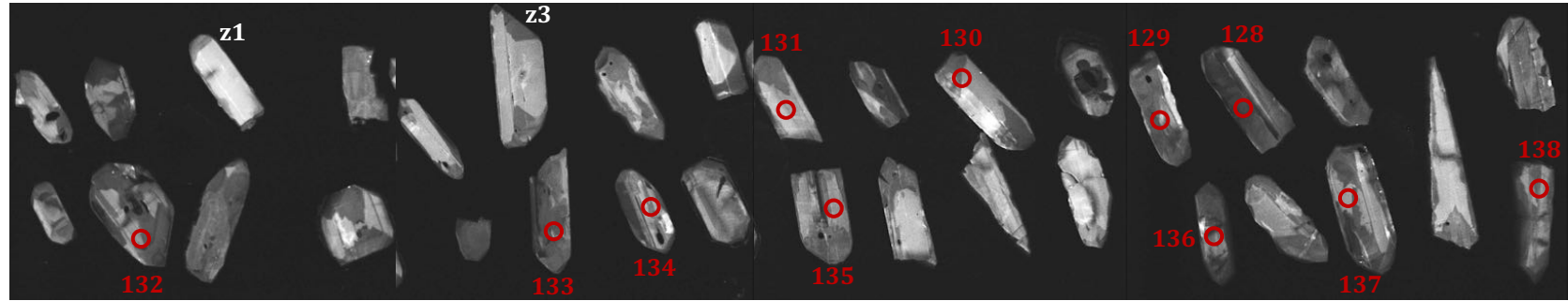
B1551 zircon
Cathodoluminescence (CL) images



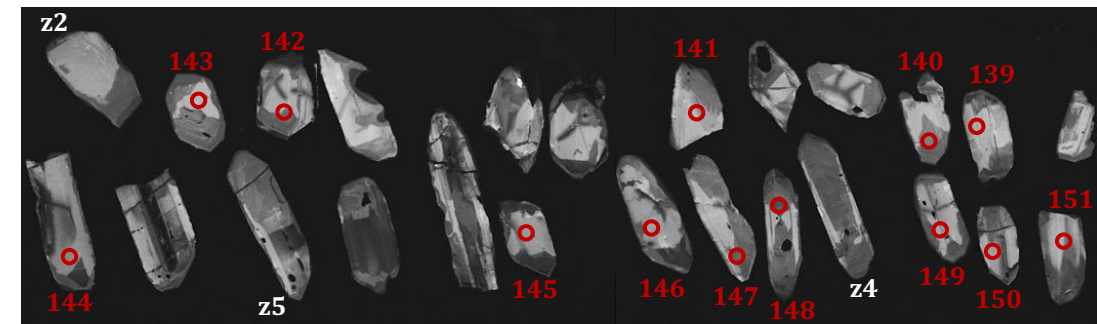
○ = 25 micron
diameter laser
ablation pit

B1733 zircon
Cathodoluminescence (CL) images

Small Row 1

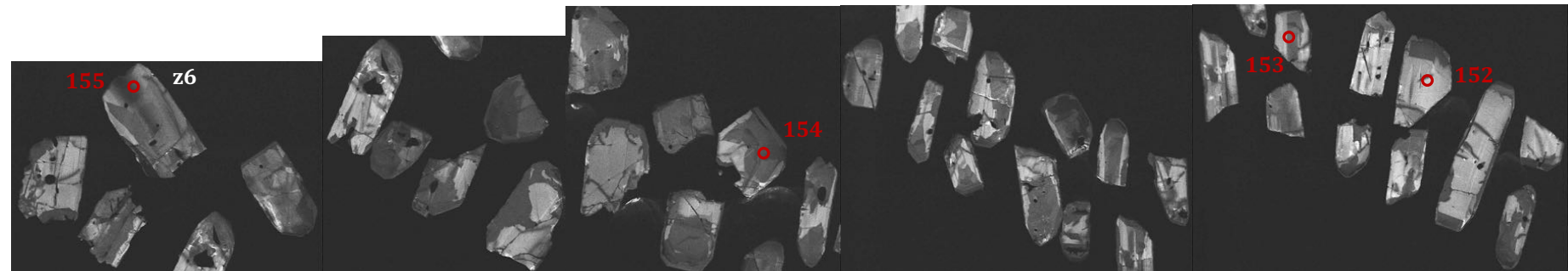


Medium Row 1



○ = 25 micron
diameter laser
ablation pit

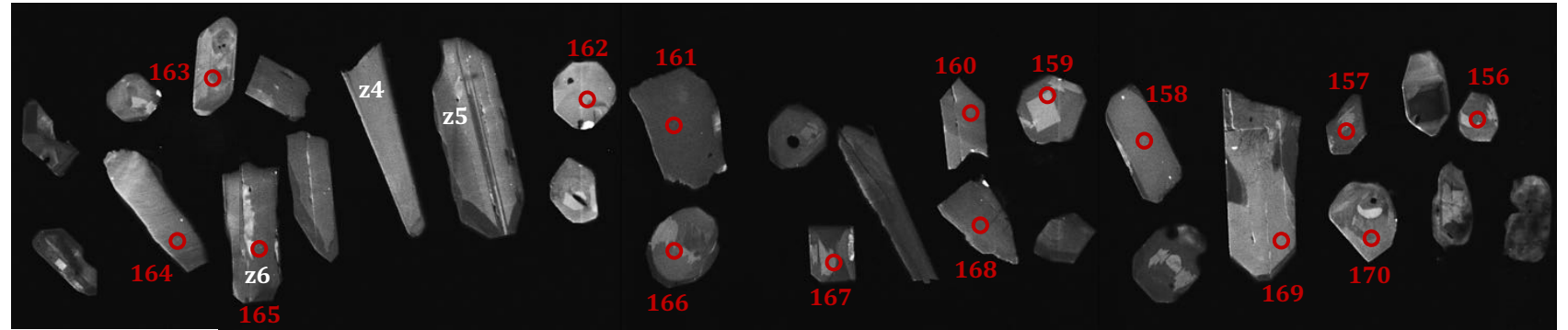
Large Row 1



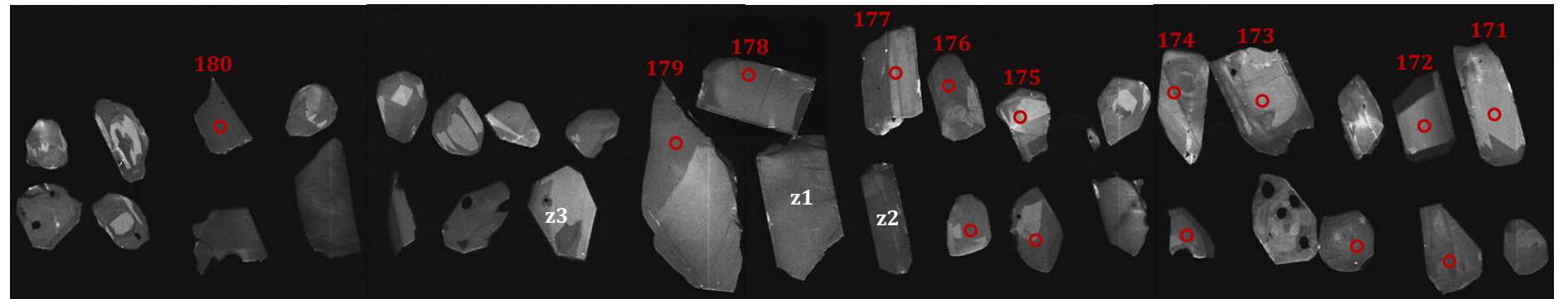
B1741 zircon
Cathodoluminescence (CL) images

○ = 25 micron diameter
laser ablation pit

Small Row 1

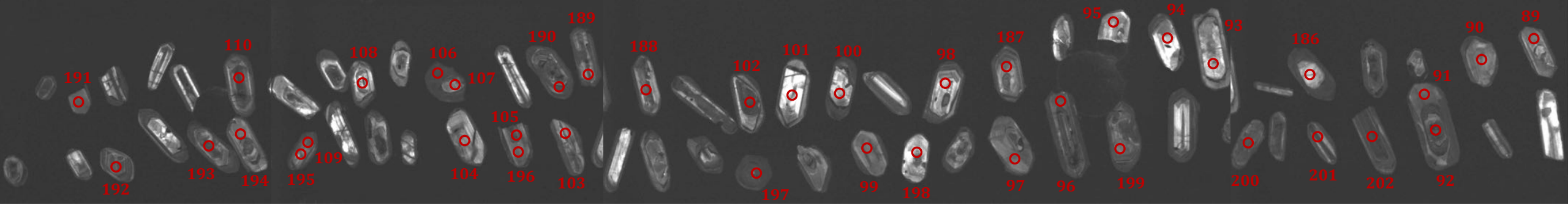


Medium Row 1

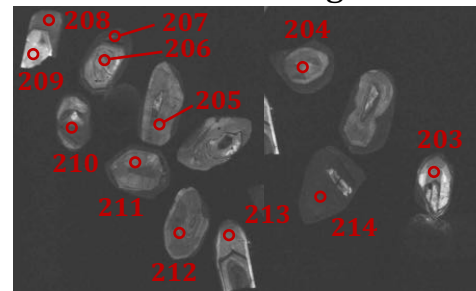


B1752 zircon
Cathodoluminescence (CL) images

Small Row 1



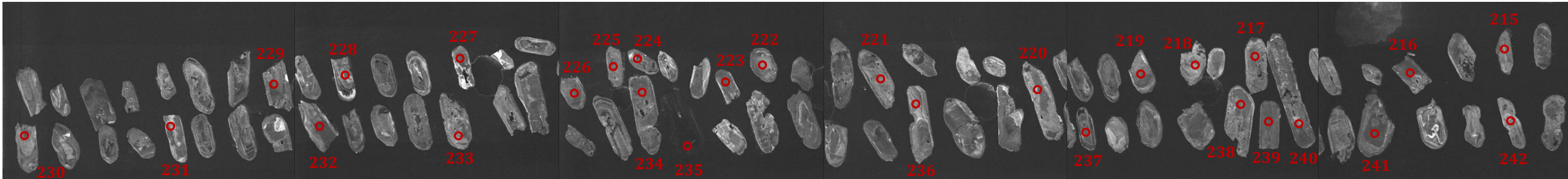
Large Row 1



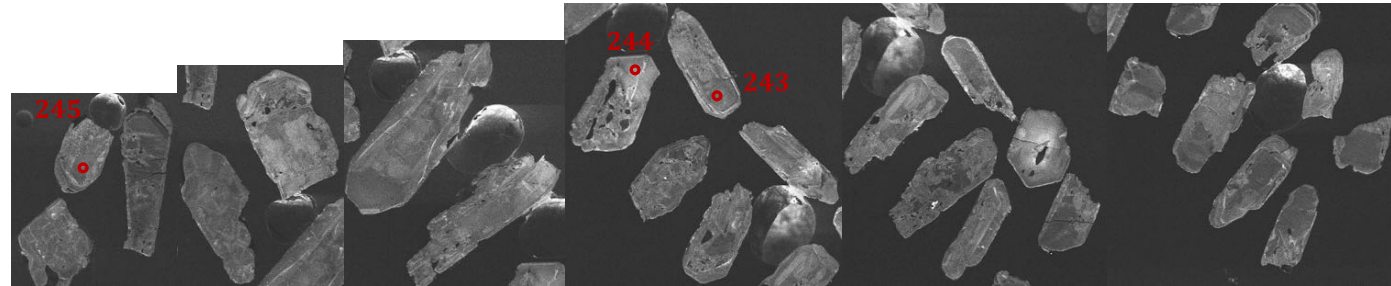
○ = 25 micron diameter laser ablation pit

B1753 zircon
Cathodoluminescence (CL) images

Small Row 1

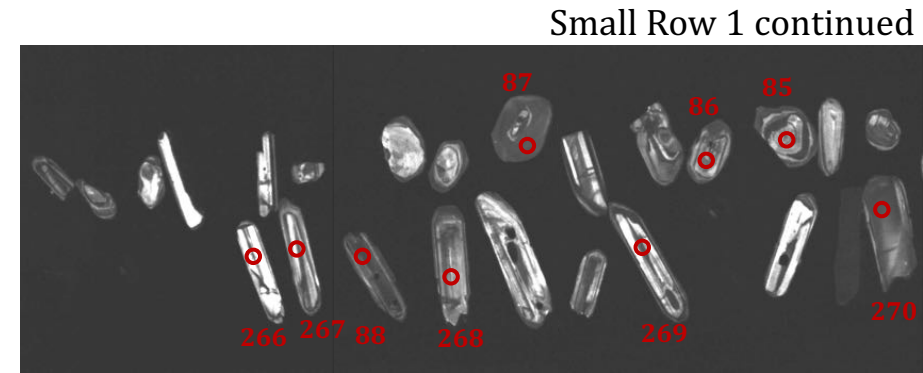
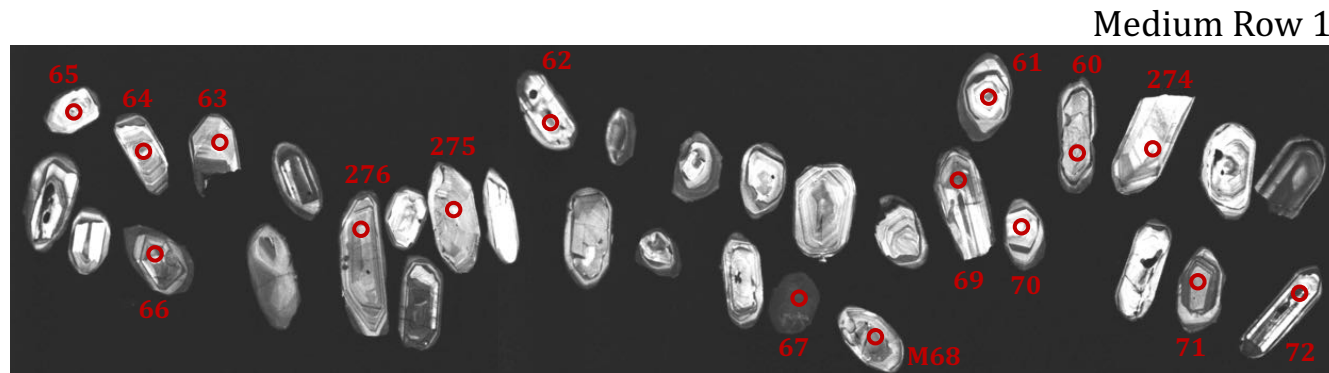
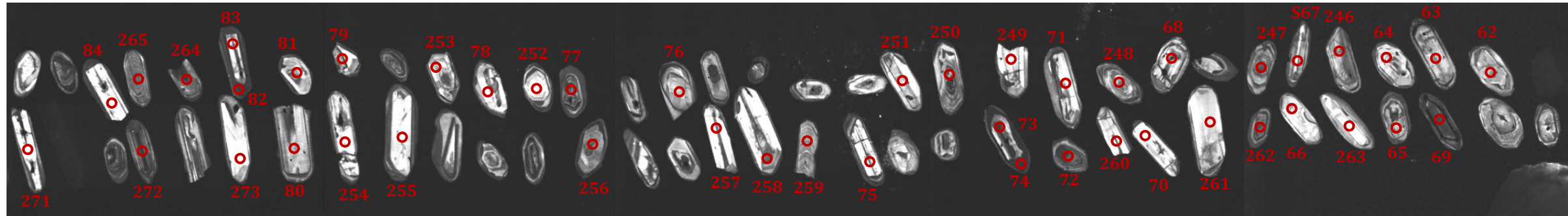


Large Row 1



○ = 25 micron diameter laser ablation pit

B1755 zircon
Cathodoluminescence (CL) images



○ = 25 micron diameter laser ablation pit