LCLS Instruments for Biology

https://lcls.slac.stanford.edu/instruments/mfx

https://lcls.slac.stanford.edu/instruments/cxi
CXI – Coherent X-ray Imaging

- High power density in-vacuum sample environment
- 3 sample chambers:
  - 1 micron focus
  - 100nm focus
  - “parasitic” Serial Sample Chamber uses a refocused unscattered beam
Jungfrau-4M Detector Ready for Use
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MFX - Macromolecular Femtosecond Crystallography

- High power density atmospheric pressure sample environment
- Versatile system, configurable for specific needs
New Capabilities for LCLS Biology – MFX ePix10K Detector
Upgraded detector ePix10k-2.1M

~5x lower noise and 4x higher dynamic range compared to CSPAD

<table>
<thead>
<tr>
<th>Specification</th>
<th>ePix10k 2.1M</th>
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<tbody>
<tr>
<td>Pixels</td>
<td>100 x 100 µm</td>
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<tr>
<td>Noise r.m.s. (eV)</td>
<td>320</td>
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<tr>
<td>Max signal</td>
<td>11000</td>
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<td>(8 keV photons equivalent)</td>
<td></td>
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<tr>
<td>Frame rate (Hz)</td>
<td>120</td>
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<tr>
<td>Sensor thickness (µm)</td>
<td>500</td>
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Upcoming Capability – fs Laser System

- Pulse width 50 fs
- 3 mJ @ 120 Hz
- 800 nm wavelength
Summary

• LCLS offers 2 versatile instruments for biology
• Enhancements to capabilities with campaign are welcome
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