The Long-wavelength Macromolecular Crystallography Beamline I23 at Diamond Light Source

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Beamline I23 at Diamond Light Source will be the first dedicated beamline for long-wavelength phasing experiments from macromolecular crystals. It will operate in a core wavelength range of 1.5 to 4 Å, offering a complementary setup to the suite of already five existing MX beamlines at Diamond. To minimize absorption effects, the complete beamline will be operated in vacuum. An x-ray tomography setup will be integrated into the experimental end station to determine the crystal shape and size as a basis for an analytical absorption correction. A large curved detector will allow access to diffraction data up to $2\theta = \pm 90^{\circ}$. The presentation will address both the challenges of in-vacuum long-wavelength macromolecular crystallography and the opportunities by extending the wavelength range towards the sulfur and phosphorous K-absorption edges and report on the current status of the beamline project.