

**The International Joint CCP4 and CCP-EM School:
SouthEast Asian Training, Education and Assistance in Macromolecular Structure
(SEA TEAMS)**

13 - 22 November 2026

King Mongkut's University of Technology Thonburi (KMUTT)

Bangkok, Thailand

Color code:

Lectures and Demonstrations

Software tutorials and problem-solving

Experiments

Day 1 (13 November 2026)

Cryo-EM lectures and tutorials

Location: Science Connect Conference room

8:30 – 9:00	Registration <i>(Registration continued throughout the workshop)</i>	
9:00 - 9:30	Opening Ceremony	Higher management of KMUTT
9:10 - 9:20	Introduction to the school	Ruslan Sanishvili
9:20 - 10:30	Student Self-introduction	All students
10:30 - 11:00	Break	
11:00 - 11:30	Evolution of Macromolecular Crystallography and Crystallographic education	Ruslan Sanishvili
11:30 – 12:30	Cutting edge science with cutting edge detectors	Leonard Chavas
12:30 - 13:30	Lunch	
13:30 - 14:30	Overview of Cryo-EM techniques	Collin Palmer
14:30 - 15:30	Basics of Cryo-EM sample preparation and data collection	Puey Ounjai
15:30 - 16:15	Cryo-EM Facility at Mahidol University	Puey Ounjai
16:30 – 16:45	Break	
16:45 - 17:45	Basics of image formation and processing in SPA and ET	Collin Palmer
17:45 - 18:30	Current state of the art and future of Cryo-EM	ThermoFisher Scientific
18:30 - 19:30	Dinner	

Day 2 (14 November 2026)

Cryo-EM lectures and tutorials

Location: Science Connect Conference room

9:00 - 9:45	Introduction to RELION and Doppio	Milan Kumar
9:45 - 10:45	Overview of SPA	Colin Palmer
10:45 - 11:00	Break	
11:00 - 11:45	Overview of STA	Colin Palmer
11:45 - 12:30	Overview of Modeling tools and focus on validation of Cryo-EM maps/models	Milan Kumer
12:30 - 13:30	Lunch	
13:30 - 14:00	Make sure all students can access to VMs	Milan Kumer
14:00 - 16:30	SPA workflow	Colin Palmer Milan Kumer Colin Palmer
16:30 - 17:00	Break	
17:00 - 18:30	SPA workflow with optional model building	Milan Kumer Colin Palmer
18:30 - 19:30	Dinner	
19:30 - 21:00	SPA workflow with optional model building, continued	Milan Kumer Colin Palmer

Day 3 (15 November 2026)

Cryo-EM tutorials

Location: Science Connect Conference room

9:00 - 10:30	SPA workflow with optional model building, continued	Milan Kumer Colin Palmer
10:30 - 11:00	Break	
11:00 - 12:30	STA workflow with optional model building, continued	Milan Kumer Colin Palmer
12:30 - 13:30	Lunch	
13:00 - 16:30	STA workflow wrap up	Milan Kumer Colin Palmer
16:15 - 16:45	Break	
16:45 - 18:30	Helical reconstruction	Milan Kumer Colin Palmer
18:30 - 19:30	Dinner	
19:30 - 21:00	Helical reconstruction, continued	Milan Kumer Colin Palmer

Day 4 (16 November 2026)

Cryo-EM tutorials

Location: Science Connect Conference room

9:00 - 10:45	Helical reconstruction, continued	Milan Kumer Colin Palmer
10:45 - 11:15	Break	
11:15 - 12:30	Helical reconstruction, continued	Milan Kumer Colin Palmer
12:30 - 13:30	Lunch	
13:30 - 16:00	Other techniques, Cryo-EM wrap up	Milan Kumer Colin Palmer
16:00 - 17:00	Visualisation and analysis in life sciences with Amira	ThermoFisher Scientific

Day 5 (17 November 2026)

MX lectures on data collection and data processing

Location: Science Connect Conference room

9:00 - 10:00	Basics of diffraction pattern formation in MX	Ruslan Sanishvili
10:00 - 10:45	Effects of data collection parameters	Ruslan Sanishvili
10:45 - 11:15	Break	
11:15 - 12:30	Practical tips for data collection	Ruslan Sanishvili
12:30 - 13:30	Lunch	
13:30 - 14:30	Symmetry	Charles Ballard
14:30 - 15:15	XDS/XDSGUI Introduction	Kay Diederichs
15:15 - 16:15	XDS/XDSGUI Demonstration	Kay Diederichs
16:15 - 16:30	Break	
16:30 - 17:15	Data quality	Kay Diederichs
17:15 - 18:00	Outline of data processing with AutoPROC	Clemens Vornrhein
18:00 - 18:45	Resolution and other statistical parameters	Clemens Vornrhein
18:45 - 19:45	Dinner	

Day 6 (18 November 2026)

MX lectures on data collection and data processing

Introduction to CCP4 and DLS

Location: Science Connect Conference room

9:00 - 9:45	Data anomalies	Charles Ballard
9:45 - 10:30	Introduction to DIALS and DUI2	David Waterman
10:30 - 11:00	Break	
11:00 - 12:00	Image Integration with DUI2	David Waterman
12:00 - 12:30	CCP4 Roadmap	Eugene Krissinel
12:30 - 13:30	Lunch	
13:30 - 14:15	Navigating CCP4 Cloud	Maria Fando
14:15 - 15:15	DLS facilities for life sciences	Dave Hall
15:15 - 16:15	MX data collection at DLS	Dave Hall
16:15 - 16:45	Break	
16:45 - 18:30	CCP4 Cloud Session 1	CCP4
18:30 - 19:30	Dinner	
19:30 - 21:00	CCP4 Cloud Session 2	CCP4

Day 7 (19 November 2026)

Remote data collection at DLS, Problem-solving

Location: Science Connect Conference room, Data will be collected remotely with Diamond Light Source, UK

9:00 - 22:00	MX data collection at DLS	Students with crystals
10:00 - 12:30	Problem-solving, Student data	All tutors
12:30 - 13:30	Lunch	
13:30 - 16:15	Problem-solving, Student data	All tutors
16:15 - 16:45	Break	
16:45 - 18:30	Problem-solving, Student data	All tutors
18:30 - 19:30	Dinner	
19:30 - 21:00	CCP4 Cloud Session 3	CCP4 Group

Day 8 (20 November 2026)

Molecular replacement, Molecular graphics, Problem-solving

Location: Science Connect Conference room

9:00 - 9:45	Molecular Replacement and model preparation	Maria Fando
9:45 - 10:30	Coot and Moorhen basics	Lucrezia Catapano
10:30 - 11:00	Break	
11:00 - 11:45	Model building	Lucrezia Catapano
11:45 - 12:30	Model building, Pratical	Lucrezia Catapano
12:30 - 13:30	Lunch	
13:30 - 14:15	Validation in Practice	Robbie Joosten
14:15 - 16:15	Problem-solving, Student data	All tutors
16:15 - 16:45	Break	
16:45 - 18:30	Problem-solving, Student data	All tutors
18:30 - 19:30	Dinner	
19:30 - 21:00	Problem-solving, Student data	All tutors

Day 9 (21 November 2026)

Refinement, Ligands, Validation, Problem-solving

Location: Science Connect Conference room

9:00 - 9:45	Refinement	Keitaro Yamashita
9:45 - 10:30	Ligands	Lucy Schofield
10:30 - 10:45	Break	
10:45 - 11:25	Model validation	Robbie Joosten
11:25 - 11:45	Carbohydrate validation	Lucy Schofield
11:45 - 12:30	PDB_REDO	Robbie Joosten
12:30 - 13:30	Lunch	
13:30 - 14:15	Carbohydrate validation tutorial	Lucy Schofield
14:15 - 16:15	Problem-solving, Student data	All tutors
16:15 - 16:45	Break	
16:45 - 18:30	Problem-solving, Student data	All tutors
18:30 - 19:30	Dinner	
19:30 - 21:00	Problem-solving, Student data Back up all data	All tutors

Day 10 (22 November 2026)

PDBe, AlphaFold

Location: Science Connect Conference room

9:00 - 9:15	Welcome and Introduction	Charlotte Cordery
9:15 - 10:00	Introduction to the PDBe tools & PDBe-KB	Charlotte Cordery
10:00 - 10:30	Practical: Exploring structural data in PDBe	Charlotte Cordery
10:30 - 11:00	Break	
11:00 - 11:45	Introduction to AlphaFold DB	Razan Abbara
11:45 - 12:30	Practical: Exploring AlphaFold Models	Razan Abbara
12:30 - 14:00	Lunch	
14:00 - 14:45	Introduction to the AlphaFold Database Multimers	Razan Abbara
14:45 - 15:45	Introduction to PDBe & 3D-Beacons APIs	Charlotte Cordery
15:45 - 16:15	Practical- Structural data retrieval and analysis with APIs programmatic access. (Run through)	Charlotte Cordery
16:15 - 16:45	Break	
16:45 - 17:45	Practical continue - Structural data retrieval and analysis with APIs (AFDB)	Razan Abbara
17:45 - 18:15	Wrap-up & Discussion	Razan Abbara
18:15 - 18:30	Workshop closing remarks	All participants

Adjourned