

Thursday 11th March

13:00 - 13:10 Welcome (**Ana Gonzalez**)

13:10 - 13:25 Overview (**Colin Nave**)

Session 1: Reducing and Mitigating Radiation Damage (chairperson Ana Gonzalez)

13:30 - 13:55 **Elspeth Garman**
SCAVENGERS IN MACROMOLECULAR CRYSTALLOGRAPHY: DO THEY HELP?

14:00 - 14:25 **Gerd Rosenbaum**
TO SCAVENGE OR NOT TO SCAVENGE: THAT IS THE QUESTION

14:30 - 14:55 **Kristopher White**
A NOVEL METHOD FOR ATTENUATING X-RAY DAMAGE TO PROTEIN CRYSTALS

15:00 - 15:25 **Edward Stern**
SPATIAL DEPENDENCE AND MITIGATION OF MX RADIATION DAMAGE BY FOCUSING

15:30 - 17:00 **SSRL and LCLS tours (alternatively coffee break)**

Session 2: X-ray imaging and Use of Pulsed Sources (chairperson Gerd Rosenbaum)

17:00 - 17:25 **Malcolm Howells**
PRINCIPLES OF RADIATION DAMAGE IN COHERENT X-RAY DIFFRACTION IMAGING

17:30 - 17:55 **Chris Jacobsen**
PUSHING AGAINST DAMAGE LIMITS IN X-RAY MICROSCOPY

18:00 - 18:25 **Nobuhiro Go**
SINGLE MOLECULE IMAGING BY XFEL: GETTING AND PROCESSING SIGNALS FROM DECAYING MOLECULES

18:30 - 18:55 **John Spence**
DAMAGE REDUCTION USING FEMTOSECOND XRD - MEASUREMENTS FROM PROTEIN NANOXTALS

19:00 - 19:25 **Kelly Gaffney**
IONIZING RADIATION INDUCED CHEMICAL DYNAMICS STUDIED WITH ULTRAFAST X-RAY LASER RADIATION

Friday 12th March

8:30 - 09:00 refreshments

Session 3: Correcting for the Effects of Radiation Damage (chairperson Colin Nave)

09:00 - 09:25 **Alexander Popov**
RADIATION DAMAGE AND PRACTICAL ASPECTS OF DATA COLLECTION

09:30 - 09:55 **Ricardo Leal**
EXPERIMENTAL PROCEDURE FOR CHARACTERIZATION OF MACROMOLECULAR CRYSTAL RADIATION DAMAGE

10:00 - 10:25 **Zbyszek Otwinowski**

10:30 - 11:00 coffee break

Session 4: Radiation Chemistry and Radiolysis of Biological Molecules (chairperson Colin Nave)

11:00 - 11:25 **John McGeehan**
THE PARTITIONING EFFECT: RADIATION DAMAGE STUDIES OF PROTEIN-DNA COMPLEXES

Session 5: Beamline Instrumentation (chairperson Colin Nave)

11:30 - 11:55 **Bob Fischetti**
TECHNICAL DEVELOPMENTS FOR STUDYING RADIATION DAMAGE ON THE 1-Mm SCALE AT GM/CA-CAT

Session 6: Progress in the Understanding of Radiation Damage in MX (chairperson Elspeth Garman)

12:00 - 12:25 **James Holton**
A MECHANICAL STRAIN MECHANISM FOR GLOBAL DAMAGE

12:30 - 14:00 lunch

Session 6 continued

- 14:00 - 14:25 **Christina Homer**
*ENERGY DEPENDENCE OF HEAVY ATOM RADIATION DAMAGE
IN PROTEIN CRYSTALS*
- 14:30 - 14:55 **Frank von Delft**
*UNARMED IN THE WILD: MANAGING RADIATION DAMAGE IN
REAL LIFE*
- 15:00 - 15:25 **Nukri Sanishvili**
*PROBING RADIATION DAMAGE IN PROTEIN CRYSTALS WITH
MICRON-SIZED X-RAY BEAM*
- 15:30 - 15:55 **Alke Meents**
*ORIGIN OF RADIATION DAMAGE IN BIOLOGICAL SAMPLES AT
CRYOGENIC TEMPERATURES*
- 16:00 - 16:30 coffee break

Session 6 continued

- 16:30 - 16:55 **Douglas Juers**
*SLOW COOLING, RADIATION DAMAGE AND ANNEALING IN
CRYSTALS OF THERMOLYSIN*
- 17:00 - 17:25 **Chitra Rajendran**
*ROOM TEMPERATURE DATA ACQUISITION WITH THE PILATUS
6M PIXEL DETECTOR*

Session 7: Complementary (or non-crystallographic) Methods to Study Radiation Damage (chairperson Martin Weik)

- 17:30 - 17:55 **Oleg Poluektov**
*FUNCTION/STRUCTURE RELATIONSHIPS AND RADIATION
DAMAGE IN PHOTOSYNTHETIC REACTION CENTER PROTEINS*
- 18.00 - 18.25 **Allen Orville**
*CORRELATED SINGLE-CRYSTAL SPECTROSCOPY AND X-RAY
CRYSTALLOGRAPHY AT BEAMLINE X26-C OF THE NSLS*
- 18.30 - 18.55 **Robin Owen**
*EXPLOITING X-RAY INDUCED LUMINESCENCE OF
MACROMOLECULAR CRYSTALS AS A METRIC FOR RADIATION
DAMAGE*
- 19:30 workshop dinner

Saturday 13th March

8:30 - 9:00 refreshments

Session 8: Radiation Damage in Electron Microscopy and Electron Crystallography (chairperson Elspeth Garman)

09:00 - 09:25 **Benjamin Bammes**
RADIATION DAMAGE EFFECTS AT FOUR SPECIMEN TEMPERATURES FROM 4 K TO 100 K

Session 9: Radiation Damage in Redox Proteins and Selenium Labelled Proteins (chairperson Martin Weik)

09:30 - 09:55 **Åsmund Røhr**
EFFECT OF X-RAY RADIATION ON FLAVIN COFACTORS

10:00 - 10:25 **Daniele de Sanctis**
UV DAMAGE OF SEMET AS EXPERIMENTAL PHASING TECHNIQUE

10:30 - 11:00 coffee break

Session 10: Radiation Damage to Study of Protein Function (chairperson Ana Gonzalez)

11:00 - 11:25 **Tzanko Doukov**
CRYSTALLOGRAPHIC AND SINGLE CRYSTAL SPECTRAL ANALYSIS OF THE PEROXIDASE FERRYLL INTERMEDIATE

11.30 - 11.55 **Martin Weik**
SPECIFIC RADIATION DAMAGE AND ENZYME RADIATION INACTIVATION

12:00 - 13:00 Final discussion and summary (**Elspeth Garman**)