Annual Training Course in Luminescence Dating

The Nordic Centre
for Luminescence Research (NCLR)

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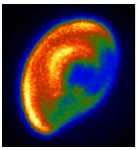
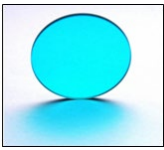
NCLR offers a two week training course in retrospective dosimetry using optically stimulated luminescence (OSL). The course will be held at DTU Nutech, Risø Campus, Roskilde, Denmark.

The NCLR is made up of two independent groups:
The Nordic Laboratory for Luminescence Dating (NLL), Department of Geoscience, Aarhus University. NLL has >25 years of experience in the development and application of techniques and protocols for retrospective dosimetry. NLL specialises OSL dating of sediments and produces 600-800 dates a year.

The Luminescence Research Laboratory (LRL), DTU Nutech, Technical University of Denmark. The LRL has >30 years of experience in luminescence research, including retrospective dosimetry, and development and manufacture of instruments. The laboratory was the first to apply OSL methods to accident dosimetry and it produces the Risø TL/OSL reader of which >400 are used by research and dating laboratories around the world.

Retrospective Dosimetry

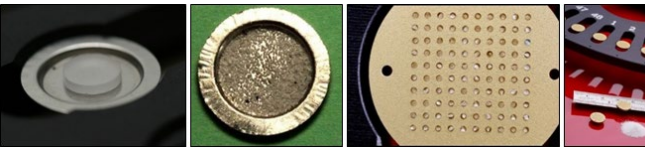




Retrospective dosimetry based on luminescence methods can be divided into two main categories: 1) archaeological and geological dating and 2) accident dosimetry. In dating applications the goal is to determine the dose absorbed by natural materials resulting from exposure to the ambient radiation environment. By measurement of the dose rate in the media, the absorbed dose can be converted into an age. In accident dosimetry the goal is to reconstruct doses to a population resulting from a radiation accident. The accident dose absorbed in materials will be superimposed on the background dose, i.e. the dose determined in dating applications. The techniques used in accident dosimetry and dating applications are identical.

Course Contents

The course covers basic OSL theory and introduces the participants to the two main aspects of retrospective dosimetry: dose and dose-rate determination. The course consists of a series of lectures covering theory as well as practical exercises. The participant will gain hands-on experience in operating the Risø TL/OSL reader; including installation and maintenance. At the end of the two week course the participants should confidently be able to determine a luminescence age.



Course Outline

Basics of luminescence and OSL dating
Choice of dosimeter material, mineral separation and dose response

Installation and use of the Risø TL/OSL Reader
Detailed description of how to install the reader, use of hardware and software, and instrument maintenance.

Dose estimation
The Single Aliquot Regenerative-Dose (SAR) protocol

Origins and determination of dose rate
Gamma spectroscopy and beta counting

Age calculation
Includes uncertainty analysis

Dating of young sediments
Problems and case studies

Dating of old sediments
Problems and case studies (age limits etc.)

Incomplete bleaching
Includes single grain analysis

Rock surface dating
Theory and case studies

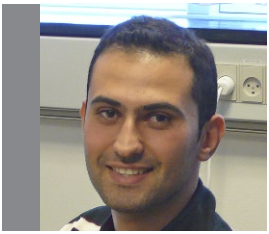
For course dates and further information, please check the website www.osl.risoe.dk

NCLR course organisers

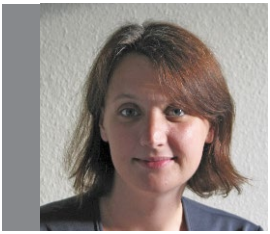
Jan-Pieter Buylaert
DTU Nutech & Aarhus University

Mayank Jain
DTU Nutech

Andrew Murray
Aarhus University



Reza Sohbati
DTU Nutech



Kristina Thomsen
DTU Nutech

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The Nordic Centre for Luminescence Research (NCLR) is a joint centre at DTU Risø between the Technical University of Denmark and the Department of Geoscience, Aarhus University

The remit of the NCLR includes:

1) Fundamental and applied research and development in all aspects of luminescence studies.

2) Offering research facilities to visiting scientists and students from around the world.

3) Providing state-of-the-art luminescence dating service to geologists and archaeologists on a cost-recovery basis.

4) Development for research, dating, retrospective dosimetry and other applications

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