# lexsygresearch

# the most advanced TL/OSL reader

#### **Applications**

Luminescence dating | Material research | Authenticity testing Accident dosimetry | Radiation protection | Food irradiation Solid state dosimetry | Bioluminescence and more



# Features of lexsygresearch

#### Modular design

Interchangeable OSL stimulation units (up to 3 wavelengths per OSL), accommodates up to 4 detection units and up to 2 irradiation sources

#### No crosstalk

Independent operation of measurement chamber and sample reservoir ensures absence of both stimulation and radiation crosstalk

#### Nonstop operation

Ability to load and unload samples while another sample is undergoing analysis/treatment inside the measurement chamber

#### **Flexibility**

Software controlled switch of detection filters within a measurement sequence

#### Homogeneity

Highly homogeneous and stabilized optical stimulation provides identical measurement conditions

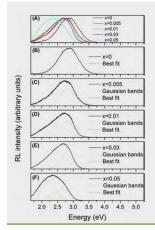
#### Accessibility

IP based system allows remote operation and technical support from anywhere in the world

#### Easy upgrade

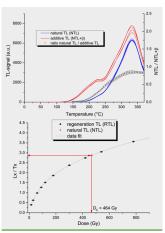
Modular design allows future expansion of device capabilities by easily adding components

#### Material research



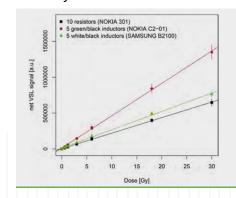
Radioluminescence investigation of Ce incorporation in LiLaZr (from Trofimov et al., 2017).

#### Luminescence dating

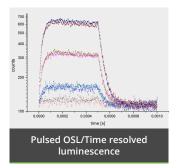


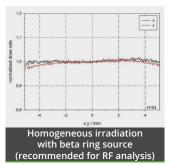
Thermoluminescence (orange-red TL) measurements of heated clay and SAR dose response curve measured with a red sensitive PMT (modified after Richter et al., 2017).

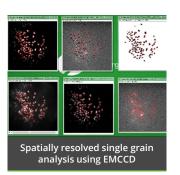
#### Dosimetry

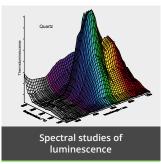


Violet-OSL (VSL) dose response curves for resistors and inductors (from Bassinet et al., 2017).



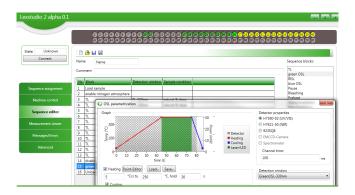






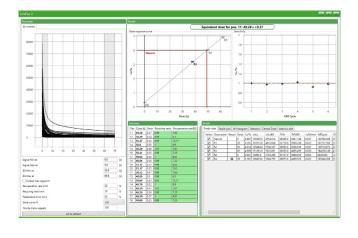
# LexStudio - Operating Software

- > Multi-level user account management
- Automated SAR sequence generation (SARPI)
- Almost free parameter definition (individual/variable duration of stimulation, detection and heating)
- > Data acquisition and storage of actual heater temperature
- Data export (ASCII-, bin-, binx-, XYSG- formats)



# LexEva - Data Evaluation Software

- > Based on R-package Luminescence
- > SAR analysis (Radial plot, Abanico plot, etc.)
- > Multiple aliquot regression analysis
- Reporting function (Print/PDFs)
- Automated background subtraction (optional)
- Data import (bin-, binx-, XSYG- formats)



#### **Configuration options**

- Beta, Alpha or X-ray radiation sources
- Automated detector changer (4 positions)
- Automated detection filter changer (incl. filters)
- > Infrared photoluminescence (IRPL) unit
- Single grain analysis
- CCD based high sensitive spectrometry detection unit (UV/IR spectroscopy)
- > LED-based bleaching unit (solar simulator)
- Sample camera
- Ultra-fast pulsing (< 10 ns); Time resolved luminescence</li>
- > Peltier cooling for for radiation defect characterization
- > XRF add-on for element analysis of quartz and feldspar

## **Technical specifications**

Sample	automated 80-position sample changer
Thermal stimulation	up to 710 °C 0.1 – 20 °C/s (@Tmax = up to 710 °C)
Optical stimulation	up to 3 wavelengths per OSL unit  Available stimulation wavelengths (LED/laser diodes)  UV (365 nm), Violet (405 nm), Blue (458 nm), Green (525 nm), Yellow (590 nm), IR (850 nm), Red (620 nm)  Modes of OSL operation:  · Continuous Wave OSL (CW-OSL)  · Linear Modulated OSL (LM-OSL)  · Pulsed OSL (POSL)
Detection unit	UV-VIS PMT (default), Red sensitive PMT, near-IR PMT, EMCCD, Spectrometer
Laptop or PC requirement	Windows 10 or latest with 2 Ethernet ports
Power requirement	110 – 250 V AC, 10 A
Dimension	716 x 1033 x 850 mm
Weight	up to 200 kg
Certification	manufactured under ISO 9001 guidelines, CE conform supported by:  Federal Ministry of Economics and Technology
Last revision: 14 <sup>th</sup> June, 2022	DEKRA 60001 on the basis of a decision by the German Bundestag

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