

LUMINESCENCE SPECTROSCOPY FOR RETROSPECTIVE RADIATION DOSIMETRY: A CONTINUOUS COLLABORATION BETWEEN KOREAN AND AUSTRIAN LUMINESCENCE LABORATORIES

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Background of the proposed follow-up project

Since 2017, a collaboration between the Gyeongsang National University (GNU) and the University of Salzburg has been started for scientific exchange and future projects between both luminescence laboratories. This joint collaboration was established to build a scientific partnership between both laboratories which was founded by EURASIA-PACIFIC UNINET.

Main objective of the follow-up project

The main objective of the follow-up project is the continuation of the collaboration between the Korean and Austrian laboratories. The scientific partnership focuses on an active exchange of novel ideas and common investigation of luminescence samples for OSL and TL measurements. On the one hand samples of natural materials (i.e. rock slides consisting of feldspar and quartz) are further investigated which are used for geological dating that reflects the main focus of the Austrian luminescence laboratory. On the other hand the focus of the Korean laboratories are measurements on components of personal electronic devices (such as touch screen glass, resistors, inductors and IC chips from mobile phones and bank/credit cards) which are performed in the field of retrospective dosimetry for radiological emergency. An essential characterization of luminescence properties has not yet been established for touch screen glass samples and glass samples which are extracted from modern mobile phones. So far, there is a lack of detailed investigations for this kind of glass material, especially for glasses used for new display technology. The same applies for the detailed investigations on IC chips from bank/credit cards. For this purpose, spectroscopic measurements of radiation induced OSL/TL and additional RL measurements are carried out for a detailed luminescence characterization. The aim is to analyse the luminescence properties of this material and to optimize the measurement parameters (choice of stimulation type, detection window, background signal reduction, dose response, fading characteristics etc.).

The follow-up project consists of several tasks which are processed by each project partner (see above section "Kurzb Beschreibung der Aufgaben"). Laboratory visits are beneficial for both project partners: performing common measurements and analysing the results are the main objective of the joint project. Discussions of the results within the laboratory team will stimulate the interpretation of the results and help to widen the knowledge.

Students associated with the laboratory team are encouraged to actively participate to these discussions. The follow-up project should pioneer and stimulate the realization of a student exchange between the laboratories of the project partners in the future to encourage the exchange of knowledge. Next to in person meetings some virtual remote meetings are planned providing a convenient platform for discussions of the results and for enhancing productivity by keeping track of the project tasks.

In general, continuation of the scientific collaboration between both luminescence laboratories is addressed as the main goal and the project outcome should be visible in the scientific community.

Dissemination of the project results

As an expected long-term result of the collaboration the aim is to publish the outcome in the international peer-reviewed scientific literature. The outcome is disseminated as contributions to national and international conferences in the broad field of luminescence. There are several international conferences which are suitable to present the results of the project and to exchange the experiences and research results:

- ICDA-3 (3rd International Conference on Dosimetry and Applications) will take place in Lisbon, Portugal, on 27-31 May 2019. ICDA-3 will be a major gathering of experts addressing a broad range of Dosimetry topics.
- ISORD-10 (10th International Symposium on Radiation Safety and Detection Technology), which will be held in July 2019. The exact dates and venue will be published soon.
- ICRR Congress (16th International Congress on Radiation Research), which will be held in Manchester on 25-29 August 2019.
- SSD19 Conference (19th International Conference on Solid State Dosimetry), which will be held on 15-20 September 2019 in Hiroshima City, Japan. The presented contribution (poster or oral presentation) will be published in a special issue of a ranked scientific journal.

Duration of the project

The starting date of the project is proposed in the second half of 2018. The duration of the proposed project is one year.

