

Enhancement of Scientific Excellence and Innovation Potential in Electronic Instrumentation for Ionising Radiation Environments – ELICSIR

www.elicsir-project.eu

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- Project started: 1 September 2019
- End of project: 28 February 2023
- Extended for 6 months - most of the planned activities are necessary to take place live

www.cordis.europa.eu/project/id/857558



Coordinator:

- Faculty of Electronic Engineering, University of Niš, Niš, Serbia (**ELFAK**) - € 231 437,50

Partners:

- Tyndall National Institute, University College Cork, Cork, Ireland - € 211 375
- IHP GmbH Institute for High Performance Microelectronics, Frankfurt (Oder), Germany – € 210 250
- University of Granada, Granada, Spain - € 138 750



Main goal of the project:

ELICSIR project is aimed at significant strengthening of the research and innovation capacity of the Faculty of Electronic Engineering (ELFAK), University of Nis, in the field of electronic instrumentation for radiation environments, radiation dosimetry and design of radiation hard electronics.



Main actions of the project:

- the transfer of skills through trainings and specialized courses
- joint collaborations and the dissemination of project results
- various networking initiatives on the local, national and European level.



Actions of work plan:

- short-term staff exchanges, organisation of summer/winter schools, attendance to specialised courses and joint experiments - particular emphasis to training of early stage researchers;
- joint collaboration after the project, establishment of links with a wide range of stakeholders;
- networking and knowledge transfer on local, regional and European level through organisation of workshops, conference sessions and a symposium;



Actions of work plan (continuation):

- linking with related projects and joint visits to distinguished research labs
- dissemination of project results targeting wide scientific community;
- outreach activities for general public in relation to significance of the proposed research;
- enhancement of the educational potential - knowledge transfer to MSc and PhD students



Work packages:

- WP1: Staff and students training
- WP2: Establishment of sustainable collaboration
- WP3: Boosting of networking capacity
- WP4: Dissemination, outreach and exploitation
- WP5: Project management



Problems in the realization of the project due to COVID-19

Many planned activities must be held live!

One of planned live activities:

- Staff and students (MSc and PhD) training through visits at partner institutions (duration 1 – 3 months per visit)
- Budget for travel and subsistence expenses for ELFAK only is 71 000 EUR

Our planned longer visits to partner institutions:

- Visits to Tyndall (8 months)
- Visits to IHP (9 months)
- Visits to UGR (7 months)
- 24 months in total -

What we could realize:

- One visit of a master student at Tyndall Institute – from 14 October 2019 to 12 December 2019



What we started with the realization, but we could not finish:

- Two master students should have gone to IHP, from 01 March 2020 to 30 April 2020
- They bought tickets and booked accommodation, but they could not travel because of COVID-19
- Obviously, only two (of 24) months was realized up to now

What we started with the realization, but we could not finish (continuation):

- 3-day Training School was scheduled from 20-22 April 2020 at IHP Institute
- About 10 master's and doctoral students from the ELFAK should have gone to IHP
- Nobody knows if the travel situation will improve by the end of 2021!

A brief summary of some significant activities that took place live:

- 3 – 4 October 2019 – Official kick-off meeting in Niš
- one master student visited partner in Ireland (two master students had to cancel visits to Germany)
- one joint experiment (from 18-20 September 2020) with partners from Tyndall Institute at Vinča Institute, Belgrade
- one live promotion activity: 22 - 24 January 2020 - Stefan Ilić, attended the ATLAS Roman Pots General meeting at CERN, Geneva, Switzerland, and gave presentation



Some other planned activities - performed

- During the first year, three master students completed master studies within ELICSIR project and successfully defended their master's theses:
- Luka Spahić, Design and implementation of an electronic circuit for measuring low currents based on transimpedance amplification
- Stefan Ilić, Investigation of the possibility of using a commercial floating gate transistor as an ionizing radiation detector in high sensitivity mode
- Laza Kostić, Self-sustaining, low-power embedded system for measuring the absorbed dose of ionizing radiation



- the first master thesis was done in collaboration with partners from Tyndall Institute
- the other two worked on their master's thesis in collaboration with partners from IHP
- **they spent one year in master's studies and were not able to stay at partner institutions, as planned**
- **consultations were conducted online, but that was certainly not enough**
- also, unfortunately, colleagues from partner institutions could not be members of their commissions



Some activities – planned live, done online

- 26 August and 9 September 2020 - two days Online Summer School: Radiation Effects in Electronic Devices, Circuits and Systems, organized by IHP was held online

www.elicsir-project.eu/activities/IHP_Summer_School_2020.php

- **it was planned to be held in Niš**

Some activities – planned live, done online (continuation)

Workshops organization

- The 1st Workshop – organized by Tyndall - with participants from project institutions - July 2020
- The 2nd Workshop - organized by UGR – with participants from a number of institutions – March 2021
www.elicsir-project.eu/activities/2nd_Workshop_2021.php
- **Both events were planned to be held in Niš!**



Some activities – planned live, are held online

- two master students are working their master's theses within ELICSIR project (from October 2020 to October 2021)
- one of them (Aleksandar Jevtić) in collaboration with colleagues from Tyndal Institute, and the other one (Stefan Popović) with colleagues from IHP
- unfortunately, visits to partner institutions are still not possible, so **the collaboration takes place only online, which is certainly not enough**
- they have little chance to visit the partner institutions



Some activities – planned live, are held online (continuation)

- three PhD students are working within the project
- one of them (Marija Živković) in collaboration with colleagues from Granada University, the other one (Stefan Ilić) with colleagues from IHP, and the third one (Sandra Veljković) with colleagues from Tyndall Institute
- **the collaboration takes place only online**

Some activities – planned live, are held online (continuation)

Expert visits from partner institutions to ELFAK:

- in the first year, funds were planned for 4 visits of experts from partner institutions to ELFAK (4 visits per year, 12 expert visits in total)
- the duration of each visit is about one week
- **not realized live, but realized online**



Some other activities planned live: conference participation, visits to research laboratories, training schools,...

- The funds are planned for:
- participation in international conference – **done online**
- joint visits to distinguished research lab - **were not possible**
- training school is planned to be held this year in Tyndall Institute - **will be online in April 2021**



Further planned activities:

- Joint experiments in European centres were planned - several experiments were done by people from ELFAK at the Vinča Institute, instead of being done with partners in international laboratories
- The performed experiments were planned with colleagues from partner institutions



Some activities – are held online

- Project consortium meetings are held regularly online, and e-mail communication is very common
- Stakeholders' forum formed and maintained on a regular basis
- Very good communication with project partners and the members of stakeholders' forum!



Influence on the publication of papers

- **Horizon 2020 rules:**
 - papers must be published in a peer-reviewed journals
 - must be paid for the open access option
- for three years of the project, it is planned to publish 6 joint papers in the peer-reviewed journals
- this plan for paper publishing was based on planned joint experiments that could not be performed
- only one experiment was performed with partners from Tyndall Institute
- several experiments were performed with ELFAK staff only, planned online with project partners



Papers published within the ELICISR project

- *Peer-reviewed journal:*
S. Ilić et al., "Floating-gate MOS transistor with dynamic biasing as a radiation sensor", *Sensors*, 20 (11), 3329, 2020. Impact factor: 3.031;
<https://doi.org/10.3390/s20113329>
- *International conference:*
M. Andjelkovic et al., "Design of Radiation Hardened RADFET Readout System for Space Applications," 2020 23rd Euromicro Conference on Digital System Design (DSD), Kranj, Slovenia, 2020, pp. 484-488, <https://doi.org/10.1109/DSD51259.2020.00082>
- **Several papers are under review in scientific journals and conferences**
- We are preparing the special session at virtual IEEE MIEL Conference that will be held in September 2021

Research funding

- **Our call: H2020-WIDESPREAD-2018-03 - Twinning**
- The following cost categories will be ineligible costs:
 - infrastructure costs;
 - equipment;
 - research costs (including consumables).
- For example, in our case, the costs of the experiments are not funded, but they are crucial for papers publication!



Research funding

- **The next call: WIDESPREAD-05-2020 - Twinning**
 - While the action does not focus on equipment and research costs, these could be accepted if they constitute only a minor part (up to 10%) of the total Horizon 2020 funding requested and are deemed necessary to fulfil the action's specific scope and objective.
 - Therefore, for grants awarded under this topic and type of action the following cost categories will be ineligible costs:
 - infrastructure costs;



**Thank you very much for your
attention!**

Goran S. Ristic

www.apl.elfak.rs/GoranRistic.php



Twinning Project Days: 24 – 25 March, 2021

