

# Newsletter #2

February 2020 – August 2020



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*ELICSIR: Enhancement of Scientific Excellence and Innovation Potential in Electronic Instrumentation for Ionizing Radiation Environments*

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## ***Welcome to the second ELICSIR project newsletter!***

This was a fun period with interesting activities and we hope you enjoy the recap on the following pages.



Project website: [elicsir-project.eu](http://elicsir-project.eu)

Type of action: Coordination and Support

Topic: H2020-WIDESPREAD-2018-2020

Call: WIDESPREAD-3-2018-TWINNING



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**FEBRUARY 2020**

 Jožef Stefan Institute

Dr. Gregor Kramberger from the Jozef Stefan Institute, Ljubljana, Slovenia, visited EF-UNINIS from 3 - 6 February 2020 as an external consultant on the ELICSIR project related to TCT research.



## Partnership with RAD 2020 Conference



rad-conference.org

*Eight  
years  
of  
science  
and  
friendship* **EIGHTH  
INTERNATIONAL  
CONFERENCE  
ON RADIATION  
IN VARIOUS FIELDS  
OF RESEARCH**

2020 | July 20 - 24  
Hunguest Hotel Sun Resort  
Herceg Novi | Montenegro

ELICSIR project started the partnership with the Eighth International Conference on Radiation in Various Fields of Research – RAD 2020 ([rad2020.rad-conference.org](http://rad2020.rad-conference.org)), and the project logo was posted on the conference website. Set to be organized from July 20–24 in Montenegro, RAD 2020 had to be transferred to the virtual format due to Covid-19 pandemic. Prof. Goran Ristić, project coordinator and conference chairman, was planned to present the project to the conference participants and companies.

Although the conference title – Eighth International Conference on Radiation in Various Fields of Research – contains only radiation, the research areas represented at RAD 2020 conference are much wider and attract a global attendance.

## SCIENTIFIC PAPER PUBLISHED IN *SENSORS*

Open Access Article

### Floating-Gate MOS Transistor with Dynamic Biasing as a Radiation Sensor

by  Stefan Ilić <sup>1</sup> ,  Aleksandar Jevtić <sup>1</sup> ,  Srboljub Stanković <sup>2</sup>  and  Goran Ristić <sup>1,\*</sup> 

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(This article belongs to the Section **Physical Sensors**)

A scientific paper written by **Stefan Ilić**, **Aleksandar Jevtić**, **Srboljub Stanković** and **Goran Ristić** titled *Floating-Gate MOS Transistor with Dynamic Biasing as a Radiation Sensor* was published in *Sensors* within the ELICSIR project.

[www.mdpi.com/1424-8220/20/11/3329](http://www.mdpi.com/1424-8220/20/11/3329)

Sensors is an open access journal from MDPI, which has an impact factor of 3.031.

The authors are very grateful to the staff of the **Tyndall Institute** and the **IHP Institute**, especially to **Dr. Russell Duane**, for their very helpful assistance.

#### Abstract

This paper describes the possibility of using an Electrically Programmable Analog Device (EPAD) as a gamma radiation sensor. Zero-biased EPAD has the lowest fading and the highest sensitivity in the 300 Gy dose range. Dynamic bias of the control gate during irradiation was presented for the first time; this method achieved higher sensitivity compared to static-biased EPADs and better linear dependence. Due to the degradation of the transfer characteristics of EPAD during irradiation, a function of the safe operation area has been found that determines the maximum voltage at the control gate for the desired dose, which will not lead to degradation of the transistor. Using an energy band diagram, it was explained why the zero-biased EPAD has higher sensitivity than the static-biased EPAD.

**Keywords:** floating-gate MOS transistor; ionizing radiation sensor; ZTC; semiconductor dosimeter; transistor dynamic biasing

## ELICSIR project Consortium Meeting

On June 24, 2020, the project partners of the ELICSIR project held a Consortium Meeting online.



Some discussion points were:

- project progress,
- impact of the COVID-19 pandemic on the project, and
- activities in the following period.

It was decided to organize a one-day online workshop in July and a two-day training school in late August/early September.

### *One-day ELICSIR project Workshop*

The first ELICSIR project Workshop, an online event attended by the staff and students from all project partners, was held on 15 July 2020.

Workshop presentations were related to the details of the scientific work done since the start of ELICSIR project.

Discussion included scientific issues and possibilities as well as plans for further research collaborations between partners.



## **1<sup>st</sup> ELICSIR ONLINE TRAINING SCHOOL:**

*Radiation Effects in Electronic Devices, Circuits and Systems*



As agreed at the ELICSIR project Consortium Meeting, the two-day ELICSIR training school was organized online. The event consisted of two days of presentations given by project participants. The 1<sup>st</sup> ELICSIR online training school was a success with great presentations and 36 registered participants.

*Day 1, 28<sup>th</sup> August, 2020*

- [Milos Krstic \(IHP, Germany\), Design Techniques for Rad-hard ASICs](#)
- [Zoran Stamenkovic, Marko Andjelkovic \(IHP, Germany\), Reliable Electronic Devices, Circuits and Systems](#)
- [Pylyp Ostrovskyy \(IHP, Germany\), ASICs for Space: Design Examples](#)

*Day 2, 09<sup>th</sup> September, 2020*

- [Antonio Lallena \(University of Granada, Spain\), Monte Carlo Basics](#)
- [Miguel Angel Carvajal \(University of Granada, Spain\), MOSFETs Dosimetry](#)
- [Aleksandar Jaksic \(Tyndall, Ireland\), Radiation Dosimetry Research at Tyndall Institute \(Experiences of a Lucky Researcher\)](#)