



**Third International
Conference on Radiation
and Applications in Various
Fields of Research**

**June 8 - 12 | 2015
Slovenska Plaža
Budva | Montenegro
www.rad-conference.org**

**RAD
BOOK**

**OF
ABSTRACTS**

PUBLISHER: RAD Association, Niš, Serbia
www.rad-association.org

FOR THE PUBLISHER: Prof. Dr. Goran Ristić

EDITOR: Prof. Dr. Goran Ristić

COVER DESIGN: Vladan Nikolić, M.Sc.

TECHNICAL EDITING: Sasa Trenčić and Vladan Nikolić

PROOF-READING: Saša Trenčić, MA

ISBN: 978-86-80300-00-9

CIP - Каталогизacija у публикацији -
Народна библиотека Србије, Београд

539.16(048)(0.034.2)

INTERNATIONAL Conference on Radiation and Applications in Various Fields of
Research (3rd ; 2015 ; Budva)

Book of Abstracts [Elektronski izvor] / Third International Conference
on Radiation and Applications in Various Fields of Research, RAD 2015, June
8-12, 2015, Budva, Montenegro ; [editor Goran Ristić]. - Niš : RAD
Association, 2015 (Niš : RAD Association). - 1 elektronski optički disk
(CD-ROM) ; 12 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. -
Tiraž 400. - Bibliografija uz svaki apstrakt.

ISBN 978-86-80300-00-9

a) Јонизујуће зрачење - Дозиметрија - Апстракти

COBISS.SR-ID 215620620

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DEVELOPMENT OF RADFET DETECTOR FOR PERSONAL DOSIMETER SYSTEM FOR EUROPEAN ASTRONAUTS

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Radiation environment in space is very complex, with varying contributions from photons, electrons, protons, and heavy ions. There is a need to measure radiation dose received by the astronauts onboard International Space Station (ISS), and the European Space Agency (ESA) has been supporting a collaborative research project aimed at development of a personal dosimeter for European astronauts at ISS.

The development of the personal dosimeter system is in the final phase, with the launch expected in the second half of 2015. The system is called “European Crew Personal Active Dosimeter (EuCPAD)” and consists of a base unit and several mobile units. Base unit is stationery and houses system electronics, Tissue Equivalent Proportional Counter (TEPC), and charging slots for mobile units. Mobile units are worn by the astronauts during their daily activities and consist of four dosimetric modules: thin silicon diode, thick silicon diode, Direct Ion Storage (DIS) dosimeter, and Radiation Sensing Field Effect Transistor (RADFET).

We describe the EuCPAD system and our efforts in development of the RADFET module for the EuCPAD mobile unit.