

09:00h – 09:10h | Welcome & introduction | Tabloo, room Neutron (auditorium)

09:00h Welcome & introduction to the PhD Day
Michèle Coeck, Director SCK CEN Academy for Nuclear Science and Technology

Session 1 | Sustainable Waste Management & Decommissioning (8 orals & 3 posters)
Chair: Christophe Bruggeman

09.10 Introduction

09.20 **Hassan Al Mais**

Investigation of the effect of the pore fluid chemistry on the hydro-mechanical behavior of Boom Clay (C-H-M coupling behavior of Boom Clay)

SCK CEN mentors: Xiang Ling Li & Suresh Seetharam

Promoters: Frédéric Collin (ULiège) & Cui Yuyun (Ecole des Ponts ParisTech)

09.30 **Emile Mukiza**

Evolution of microstructure, mineralogy and mechanical properties of metakaolin-based geopolymer under irradiation at early ages

SCK CEN mentors: Tri Quoc Phung & Suresh Seetharam

Promoter: Geert De Schutter (UGENT)

09.40 **Debabrata Ghosh**

Synergetic influence of leaching and alkali-silica reaction on the properties of cemented waste-forms containing high nitrate content

SCK CEN mentors: Eduardo Ferreira & Tri Quoc Phung

Promoter: Özlem Cizer (KU LEUVEN)

09.50 **Abubaker Danfour**

Multi-scale study of delayed ettringite formation in concrete

SCK CEN mentors: Janez Perko & Suresh Seetharam

Promoter: Özlem Cizer (KU LEUVEN)

10:00 **Luca Boldrini**

Long-term consequences of exposure to nuclear accident relevant radionuclides in Lemna minor from (epi)genetic to community level effects.

SCK CEN mentors: Nele Horemans & Gustavo Turqueto Duarte

Promoter: Henriette Selck (URoskilde)

10:10 **Brix De Rouck**

Studying the long-term effects of the nuclear Chernobyl accident on a radiosensitive plant, Pinus sylvestris, using a multi-level-omics approach

SCK CEN mentors: Nele Horemans & Gustavo Turqueto Duarte

Promoter: Els Prinsen (UAntwerpen)

10.20 **Jens-Peter Frankemölle**

Three dimensional flow-field reconstruction using LIDAR measurements for near-range atmospheric dispersion

SCK CEN mentor: Johan Camps

Promoter: Johan Meyers (KU LEUVEN)

10.30 **Stijn Van Leuven**

Improved deposition modelling based on combining state-of-the-art atmospheric dispersion simulations and numerical weather data

SCK CEN mentors: Pieter De Meutter & Johan Camps

Promoters : Piet Termonia (UGENT) & Andy Delcloo (KMI)

10.40 Q&A

11.00 End of the session

11:00h – 11.30 | Coffee break & poster exhibition| Central square

Session 2 | Nuclear Medical Applications (4 orals & 3 posters)

Chair: Maarten Ooms

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| 11.30 | Introduction |
| 11.40 | Cédric Bonneux <i>Development of chelators for ²²⁵Ac based radiopharmaceuticals</i> SCK CEN mentors: Tomas Opsomer & Michiel Van de Voorde Promoters: Wim Dehaen & Thomas Cardinaels (KU LEUVEN) |
| 11.50 | Michelle Andersson <i>Modelling of the dose-response for nephrotoxicity in preclinical targeted radionuclide therapy with ¹⁶¹Tb and ¹⁷⁷Lu radiolabeled peptides</i> SCK CEN mentor: Clarita Saldiarraga Vargas Promoter: Nick Reynaert (ULB) |
| 12.00 | Kaat Spoormans <i>Modelling of tumor control probability in preclinical targeted radionuclide therapy</i> SCK CEN mentors: Melissa Crabbé & Koen Vermeulen Promoter: Michel Koole (KU LEUVEN) |
| 12.10 | Tiffany Thao Nguyen <i>Medical radioisotope supply chain design for security: efficiency, alignment and speed</i> SCK CEN mentors: Jared Wight & Bernard Ponsard Promoter: Joachim Arts (ULuxembourg) |
| 12.20 | Q&A |
| 12.35 | End of the session |

12.35h – 13.30h | Walking sandwich lunch & poster exhibition

The walking sandwich lunch will be held at the central square.

Posters are exhibited in the rooms Alpha, Beta and Proton per thematic area.

Session 3 | Innovative Nuclear Systems (1 oral & 4 posters)

Chair: Lucia Popescu

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| 13.30 | Introduction |
| 13.40 | Santiago Ramos Garces <i>On-line optimization of ISOL@MYRRHA performance through an intelligent and automated control system</i> SCK CEN mentors: João Pedro Fernandes Pinto Ramos & Marc Dierckx Promoter: Stijn De Rammelaere (UAntwerpen) |
| 13.50 | Q&A |
| 13.55 | End of the session |

Session 4 | Nuclear Energy Technology (4 orals & 4 posters)

Chair : Marc Verwerft

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| 14.00 | Introduction |
| 14.10 | <p>Tommy Mai <i>Thermal conductivity evolution of MTR fuels with burnup accumulation</i> SCK CEN mentors: Ann Leenaers & Jared Wight Promoter: Thomas Pardoen (UCLouvain)</p> |
| 14.20 | <p>Hussein Zahran <i>Fatigue damage in fusion and GEN IV reactor steels: FEM modelling and experimental study</i> SCK CEN mentors: Aleksandr Zinovev & Dmitry Terentyev Promoter: Abdel Wahab Magd (UGENT)</p> |
| 14.30 | <p>Filip Kolesar <i>Development of a new extraction system for selective americium separation from spent nuclear fuels</i> SCK CEN mentors: Karen Van Hecke & Ken Verguts Promoters: Koen Binnemans & Thomas Cardinaels (KU LEUVEN), Marie Cécile (CEA)</p> |
| 14.40 | <p>Hilde Lenaerts <i>Designing metal oxide-based stationary phases for the separation of ²²⁵Ac and ²¹³Bi for biomedical applications</i> SCK CEN mentor: Stephan Heinitz Promoters: Vera Meynen (UAntwerpen), Thomas Cardinaels (KU LEUVEN) & Steven Mullens (Vito)</p> |
| 14.50 | Q&A |
| 15.05 | End of the session |

15.10h – 15.45h | Coffee break & poster exhibition| Central square

Session 5 | Nuclear Science and Technology Studies (1 oral & 1 poster)

Chair: Catrinel Turcanu

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| 15.45 | Introduction |
| 15.55 | <p>Federica Panzarella <i>Social dimensions of environmental management</i> SCK CEN mentors: Turcanu Catrinel Promoters: Valérie Cappuyens (KU LEUVEN) & Bieke Abelshausen (VUB)</p> |
| 16.05 | Q&A |
| 16.10 | End of the session |

Session 6 | Radiation protection (5 orals & 4 posters)

Chair: Filip Vanhavere

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| 16.15 | Introduction |
| 16.25 | <p>Verdi Vanreusel <i>Establishing a framework for dosimetry in ultra-short pulsed high dose rate "FLASH" electron radiations</i> SCK CEN mentors: Luana de Freitas Nascimento & Lara Struelens Promoter: Dirk Verellen (UAntwerpen)</p> |

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| 16.35 | <p>Lou Van Eupen <i>Radiation-induced proneural-mesenchymal transition in glioblastoma: how does it work and how can it be prevented?</i> SCK CEN mentors: Roel Quintens & Kevin Tabury Promoter: Frederik De Smet (KU LEUVEN)</p> |
| 16.45 | <p>Emil Rehnberg <i>Development of 3D models to study cardiac ageing in space</i> SCK CEN mentors: Kevin Tabury & Bjorn Baselet Promoter: Sarah Baatout (UGENT)</p> |
| 16.55 | <p>Isabeau De Bie <i>Elucidation of neurological risks and associated pathways after early-life cranial radiotherapy making use of a novel preclinical model</i> SCK CEN mentor: Rafi Benotmane Promoter: Robrecht Raedt (UGENT)</p> |
| 17.05 | <p>Timothej Patocka <i>Copper-based materials as potential antimicrobials for spaceflight activities</i> SCK CEN mentor: Rob Van Houdt Promoter: Jean-Yves Matroule (UNamur)</p> |
| 17.15 | Q&A |
| 17.30 | End of the session |

17:30h – 17.40h | Closing words

Christophe Bruggeman, Deputy Director General SCK CEN
 Thomas Pardoen, President of the SCK CEN Scientific Council
 Tabloo, room Neutron (auditorium)

17.40h – 20.00h | Reception & poster exhibition

The reception will be held at the central square.
 Posters are exhibited in the rooms Alpha, Beta and Proton per thematic area.

Poster session (19 posters)

Poster session 1 | Sustainable Waste Management & Decommissioning

Val Abecia

Influence of redox conditions and organic matter on the partitioning and mobility of naturally occurring radionuclides (NOR's) in geothermal systems
 SCK CEN mentors: Sonia Salah & Mirela Vasile
 Promoter: Valérie Cappuyens (KU LEUVEN)

Serena Bordignon

The role of miRNAs in regulating dose rate and plant developmental-dependent responses to gamma-irradiation in rice
 SCK CEN mentors: Gustavo Turqueto Duarte & Nele Horemans
 Promoter: Tina Kyndt (UGENT)

An Thai Nguyen

Sorption of radionuclides onto C-S-H and C-A-S-H at various degradation stages
 SCK CEN mentors: Delphine Durce & Tri Quoc Phung
 Promoter: Elke Gruyaert (KU LEUVEN)

Poster session 2 | Nuclear Medical Applications

Bernat Ballester

Photonuclear cross-section measurements for the production of medical radioisotope ²²⁵Ac

SCK CEN mentor: Stephan Heinitz

Promoter: Maëlle Kerveno (UStrasbourg)

Kobe Kerkhofs

Development of TRNT radiopharmaceuticals targeting Hsp90

SCK CEN mentors: Koen Vermeulen & Maarten Ooms

Promoter: Guy Bormans (KU LEUVEN)

Camille Van Laere

¹⁶¹Tb-labeled radiopharmaceuticals targeting mucin receptors for treatment of pancreatic cancer

SCK CEN mentors: Maarten Ooms & Koen Vermeulen

Promoters: Fredrik Cleeren & Maarten Dewilde (KU LEUVEN)

Poster session 3 | Innovative Nuclear Systems

Kamiel Ceusters

Development of a Numerical Multi-Physics Method to Analyze the Vibration Characteristics of Rotating Components in Liquid Metal

SCK CEN mentors: Mikhail Iarmonov & Kirill Makhov

Promoter: Joris Degroote (UGENT)

Federico Grimaldi

Neutron Data Benchmarking at the VENUS-F zero power reactor for MYRRHA

SCK CEN mentor: Antonin Krasa

Promoter: Pierre-Etienne Labeau (VUB)

Lisa Gubbels

Development of a thorium based target for the production and release of ²²⁵Ac at the ISOL facility of MYRRHA

SCK CEN mentors: João Pedro Fernandes Pinto Ramos & Beatriz Acevedo Muñoz

Promoter: Jef Vleugels (KU LEUVEN)

Daniel Stein

Quantitative Assessment of Corrosion Products Release Rate in Liquid LBE

SCK CEN mentors: Jun Lim & Serguei Gavrilov

Promoter: Iris De Graeve (VUB)

Poster session 4 | Nuclear Energy Technology

Arnaud Duplessi

Towards understanding of the combined effect of irradiation temperature, Ni and Mn-contents on radiation hardening of RPV steels

SCK CEN mentors: Inge Uytendhouwen & Rachid Chaouadi

Promoters: Philippe Pareige & Bertrand Radiguet (University of Rouen Normandie)

Koray Iroc

Advanced microstructural characterization of fusion materials: irradiation effects

SCK CEN mentors: Dmitry Terentyev & Wouter Van Renterghem

Promoter: Nick Schryvers (UAntwerpen)

Ziwei Li

Small-scale mechanical punch testing for fusion and fission structural materials

SCK CEN mentors: Dmitry Terentyev & Stefan Holmström

Promoter: Thomas Pardoën (UCLouvain)

Pieter Troosters

Development of new ligands for selective separation of americium

SCK CEN mentors: Karen Van Hecke & Tomas Opsomer

Promoter: Wim Dehaen (KU LEUVEN)

Co-promoter: Thomas Cardinaels (SCK CEN & KU LEUVEN)

Poster session 5 | Nuclear science & technology studies

Nazanin Love

Societal and marketing challenges of NORM (Naturally Occurring Radioactive Materials) in building materials

SCK CEN mentors: Geysmans Robbe & Perko Tanja

Promoter: Malina Robert & Schroeyers Wouter (UHASSELT)

Poster session 6 | Radiation protection

Eloïse Bouges

Investigating the radioprotective mechanisms of biotic food supplements using human gut organoids-derived bioreactor

SCK CEN mentor: Felice Mastroleo

Promoter: Sarah Lebeer (UAntwerpen)

Andrea Matamoros Ortega

Assessment of out-of-field doses in proton therapy with variation of clinical parameters

SCK CEN mentors: Marijke de Saint-Hubert & Olivier Van Hoey

Promoter: Tom Depuydt (KU LEUVEN)

Sita Pinasti

Advancement of personal neutron dosimetry by establishment of flexible reference simulated neutron workplace fields and computational neutron dosimetry

SCK CEN mentors: Olivier Van Hoey & Cristian Mihailescu

Promoter: Nicolas Pauly (ULB)

Lena Van Dingenen

Fecal microbiota transplantation as a method for improving the outcomes of the dual radio- and immunotherapies within a colorectal cancer mouse model

SCK CEN mentor: Rob Van Houdt

Promoters: Surbhi Malhotra & Samir Kumar-Singh (UAntwerpen)