

## Day of the PhD's

October 23, 2014, SCK•CEN, Lakehouse auditorium

## Programme

### Oral presentations

#### Morning Session

*Chair: Prof. Thomas Pardoen, President of the Scientific Council SCK•CEN*

08:30-08:45	Registration and welcome coffee	
08:45-09:00	Welcome & introduction	Michèle Coeck, Head SCK•CEN Academy for Nuclear Science and Technology Prof. Thomas Pardoen, President Scientific Council SCK•CEN
09:00-09:25	The study of temperature and radiation induced degradation of cable polymers	<b>Tamara Djikanovic</b> SCK•CEN mentor: Milan Konstantinovic University promoters: Jacques Devaux & Thomas Pardoen, UCL Start date: November 1 <sup>st</sup> , 2012
09:25-09:50	Uncertainty propagation in the ALEPH burnup code	<b>Luca Fiorito</b> SCK•CEN mentors: Alex Stankovskiy & Gert Van den Eynde University promoter: Pierre-Etienne Labeau, ULB Start date: October 9, 2012
09:50-10:15	Advanced fibre optics temperature and radiation sensing in harsh environments	<b>Alexey Faustov</b> SCK•CEN mentor: Andrei Goussarov University promoters: Patrice Mégret & Marc Wuilpart, UMONS Start date: November 1 <sup>st</sup> , 2010
10:15-10:45	Break + poster presentations	



10:45-11:10	Polonium evaporation from irradiated lead-bismuth eutectic and its capture	<b>Borja Gonzalez</b> SCK•CEN mentor: Alexander Aerts University promoter: Johan Martens, KU Leuven Start date: August 1 <sup>st</sup> , 2011
11:10-11:35	Solid state ionic devices for lead alloys cooled nuclear systems	<b>Gabriele Manfredi</b> SCK•CEN mentors: Jun Lim & Kris Rosseel University promoter: Claudine Buess-Herman, ULB Start date: December 1 <sup>st</sup> , 2012
11:35-12:15	Presentation of the award Roger Van Geen	Professor Eric van Walle, Director-General SCK•CEN  Professor Derrick P. Gosselin, President SCK•CEN  Professor Dirk Ryckbosch, Professort UGent, Subatomic and Radiation Physics & Member of FWO jury "SCK•CEN Award Prof. Roger Van Geen"
12:15-13:30	Sandwich lunch + poster presentations	

### Afternoon Session

*Chair: Prof. em. Michel Giot, Honorary President of the Scientific Council SCK•CEN*

13:30-13:55	Predicting radiocaesium sorption with soil chemical properties for soils from Fukushima, Japan: An updated outcome and a future design for understanding the vulnerability of Japanese soils for radiocaesium transfer for crops	<b>Shinichiro Uematsu</b> SCK•CEN mentors: Hildegard Vandenhove & Lieve Sweeck University promoter: Erik Smolders, KU Leuven Start date: April 11, 2013
13:55-14:20	Changes in microstructure and transport properties of cement paste due to carbonation and leaching – from experiments to phenomenological models	<b>Tri Quoc Phung</b> SCK•CEN mentors: Norbert Maes & Diederik Jacques University promoter: Geert De Schutter, UGent Start date: March 7, 2011
14:20-14:45	Safety governance in practice: a vulnerability approach	<b>Nicolas Rossignol</b> SCK•CEN mentor: Catrinel Turcanu University promoter: Catherine Fallon, ULg Start date: October 1 <sup>st</sup> , 2012
14:45-15:15	Presentation of the best master thesis award	Michèle Coeck, Head SCK•CEN Academy for Nuclear Science and Technology Prof. Eric van Walle, Director-General SCK•CEN
15:15-15:45	Break + poster presentations	



15:45-16:10	NoDe and CATCh: two algorithms to get more accurate 16S rRNA sequencing data	<b>Mohamed Mysara Ahmed</b> SCK•CEN mentors: Pieter Monsieurs & Natalie Leys University promoter: Jeroen Raes, VUB Start date: October 8, 2012
16:10-16:35	On-line dosimetry for radiotherapy using non-invasive optical fibre sensors with Al <sub>2</sub> O <sub>3</sub> :C RL/OSL detectors	<b>Luana de Freitas Nascimento</b> SCK•CEN mentor: Filip Vanhavere University promoters: Yves De Deene, UGent & Dirk Verellen, VUB Start date: January 10, 2011
16:35-17:00	Iterative reconstruction of the ultrasound attenuation coefficient from the backscattered radio-frequency signal	<b>Natalia Ilyina</b> SCK•CEN mentors: Emiliano D'Agostino & Filip Vanhavere University promoter: Jan D'hooge, KU Leuven Start date: October 11, 2012
17:00-17:15	Closure	Prof. em. Michel Giot, Honorary President of the Scientific Council SCK•CEN
17:15	Drink	

## Poster presentations

Within the institute of Advanced Nuclear Systems (ANS)

Influence of the optical fiber type on the performances of fiber-optics current sensor dedicated to plasma current measurement in ITER	<b>Matthieu Aerssens</b> SCK•CEN mentor: Andrei Goussarov University promoter: Patrice Mégret, UMONS Start date: September 1st, 2010
MYRRHA primary heat exchanger tube rupture analysis	<b>Diego Castelliti</b> SCK•CEN mentor: Gert Van den Eynde University promoter: Lomonaco Guglielmo, UGenova Start date: March 1st, 2013
Dynamic strain sensing with optical fibre Bragg gratings in a lead-bismuth environment	<b>Ben De Pauw</b> SCK•CEN mentors: Katrien Van Tichelen & Ludo Vermeeren University promoters: Francis Berghmans & Steve Vanlanduit, VUB Start date: September 1st, 2011
Computational analysis of flow-induced vibrations in fuel rod bundles of next generation nuclear reactors	<b>Jeroen De Ridder</b> SCK•CEN mentors: Paul Schuurmans & Katrien Van Tichelen University promoter: Jan Vierendeels, UGent Start date: October 1st, 2011



$\beta$ -delayed fission in proton-rich nuclei around $Z=82$	<b>Lars Ghys</b> SCK•CEN mentor: Lucia-Ana Popescu University promoters: Mark Huyse & Riccardo Raabe, KU Leuven Start date: October 1st, 2011
Numerical modeling of oxygen mass transfer in the MYRRHA system	<b>Alessandro Marino</b> SCK•CEN mentors: Jun Lim & Steven Keijers University promoter: Johan Deconinck, VUB Start date: January 1st, 2012

Within the Institute Environment, Health and Safety (EHS)

Ionizing radiation induces a gene expression profile resembling a pro-atherosclerotic state in endothelial cells	<b>Bjorn Baselet</b> SCK•CEN mentor: An Aerts University promoter: Pierre Sonveaux, UCL Start date: September 1 <sup>st</sup> , 2013
The molecular mechanisms behind microbe-mineral interactions, on earth and in space	<b>Bo Byloos</b> SCK•CEN mentors: Natalie Leys & Rob Van Houdt University promoter: Nico Boon, UGent Start date: October 1 <sup>st</sup> , 2013
Cell-to-cell communication regulates biofilm formation in bacterium <i>Rhodospirillum rubrum</i> S1H	<b>Sandra Condori Catachura</b> SCK•CEN mentor: Felice Mastroleo University promoter: Ruddy Wattiez, UMONS Start date: December 1 <sup>st</sup> , 2011
Dynamic modelling of radionuclide transfer in forest ecosystems: experimental setup in the Mol Scots pine forest	<b>Sienke Gielen</b> SCK•CEN mentor: Jordi Vives I Battle University promoter: Caroline Vincke, UCL Start date: October 1 <sup>st</sup> , 2013
Development of aptamer-based radiopharmaceuticals for molecular targeted PET imaging: <i>in vitro</i> studies and radiolabelling with gallium-68	<b>Marlies Gijs</b> SCK•CEN mentors: An Aerts & Nathalie Impens University promoter: André Luxen, ULg Start date: October 1 <sup>st</sup> , 2011
Development of practical eye lens dosimetry for interventional procedures	<b>Edilaine Honorio da Silva</b> SCK•CEN mentors: Filip Vanhavere & Lara Struelens University promoter: Nico Buls, VUB Start date: November 18, 2013
Anisotropic diffusion of dissolved gases in Boom Clay	<b>Elke Jacops</b> SCK•CEN mentor: Christophe Bruggeman University promoters: Rudy Swennen, KU Leuven & Ralf Littke, RWTH Aachen university Start date: October 1 <sup>st</sup> , 2013



Creation of computational phantoms for application in dosimetry	<b>Pasquale Lombardo</b> SCK•CEN mentors: Anne-Laure Lebacq & Filip Vanhavere University promoter: Ria Bogaerts, KU Leuven Start date: December 9, 2013
Gene and exon expression as biomarkers of exposure and individual radiosensitivity to low- and high-LET radiation	<b>Ellina Macaeva</b> SCK•CEN mentors: Roel Quintens & Marjan Moreels University promoters: Sarah Baatout & Winnok De Vos, UGent Start date: October 1 <sup>st</sup> , 2012
Pore-scale reactive transport modelling approach: Developments and application to microstructure evolution of cement paste under calcium leaching	<b>Ravi Patel</b> SCK•CEN mentors: Janez Perko & Diederik Jacques University promoters: Geert De Schutter, UGent & Klaas van Breugel, TUDelft Start date: October 1 <sup>st</sup> , 2011
Contribution of epigenetic processes to the induction of long-term effects and adaptive responses of plants exposed to low-dose radiation	<b>Jorden van de Walle</b> SCK•CEN mentor: Nele Horemans University promoter: Ann Cuypers, UHasselt Start date: October 1 <sup>st</sup> , 2013
Comparison of gamma- and beta radiation stress responses on anti-oxidative defense system in <i>Lemna minor</i>	<b>Arne Van Hoeck</b> SCK•CEN mentor: Nele Horemans University promoters: Ronny Blust & Dries Knapen, UA Start date: October 1 <sup>st</sup> , 2011
Consequences of space stressors on immunity: evaluation of immunological changes using in vitro space analogs on earth	<b>Merel Van Wallegem</b> SCK•CEN mentors: Marjan Moreels & Roel Quintens University promoter: Sarah Baatout, UGent Start date: November 1 <sup>st</sup> , 2013
Temperature-induced mutagenesis and mortality in <i>Cupriavidus metallidurans</i> strains	<b>Joachim Vandecraen</b> SCK•CEN mentor: Rob Van Houdt & Pieter Monsieurs University promoter: Abram Aertsen, KU Leuven Start date: October 1 <sup>st</sup> , 2011
Modelling of non-linear behavior of elastic microbubbles	<b>Erik Verboven</b> SCK•CEN mentor: Emiliano D'Agostino University promoter: Koen Van den Abeele & Jan D'hooge, KU Leuven-KULAK Start date: October 1 <sup>st</sup> , 2011
The combined effect of in utero x-ray exposure and ageing causes aberrant mouse behavior	<b>Tine Verreet</b> SCK•CEN mentor: Rafi Benotmane & Roel Quintens University promoter: Lieve Moons, KU Leuven Start date: September 1 <sup>st</sup> , 2011



Reduced order modeling of the plume dispersion at Doel nuclear power station	<b>Lieven Vervecken</b> SCK•CEN mentor: Johan Camps University promoter: Johan Meyers, KU Leuven Start date: October 1 <sup>st</sup> , 2011
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Within the Nuclear Materials Science (NMS)

UO <sub>2</sub> and ThO <sub>2</sub> doped fuel	<b>Angela Baena</b> SCK•CEN mentor: Thomas Cardinaels University promoter: Koen Binnemans, KU Leuven Start date: November 16 <sup>th</sup> , 2011
Object kinetic Monte Carlo simulation of nanostructural evolution under neutron irradiation in dilute FeMnNi	<b>Monica Chiapetto</b> SCK•CEN mentor: Lorenzo Malerba University promoter: Charlotte Becquart, ULille Start date: October 1 <sup>st</sup> , 2013
Investigating liquid-metal embrittlement of T91 steel by fracture toughness tests	<b>Ersay Feyzan Ozgun</b> SCK•CEN mentor: Serguei Gavrilov University promoter: Kim Verbeken, UGent Start date: January 1 <sup>st</sup> , 2012
Effects of oxygen concentration, strain rate and temperature on liquid lead-bismuth embrittlement susceptibility of a modified 9Cr-1Mo steel under low cycle fatigue	<b>Xing Gong</b> SCK•CEN mentor: Pierre Marmy University promoter: Marc Seefeldt, KU Leuven Start date: October 1 <sup>st</sup> , 2011
Preliminary results on the temperature dependence of the dissolution corrosion behavior of 316L austenitic stainless steels in contact with static LBE	<b>Oksana Klok</b> SCK•CEN mentor: Konstantza Lambrinou University promoter: Iris De Graeve, VUB Start date: January 1 <sup>st</sup> , 2014
MAX phase-based materials for the MYRRHA pump impeller	<b>Thomas Lapauw</b> SCK•CEN mentor: Konstantza Lambrinou University promoter: Jef Vleugels, KU Leuven Start date: October 1 <sup>st</sup> , 2013

Within the Business Development & Support expert group (BD&S)

The nuclear sector and public involvement - status quo and key challenges	<b>Tobias Heldt</b> SCK•CEN mentor: Ludo Veuchelen University promoter: Michael Faure, Maastricht University Start date: October 1 <sup>st</sup> , 2011
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