

NOMATEN AUTUMN SCHOOL 2022

Materials and compounds for industrial and health applications

Time: 27.-29.9.2022

Location: Innopoli 2, Tekniikantie 14 and VTT CNS, Kivimiehentie 3, Espoo, Finland

TEAMS links to the meetings included: Day 1, Day 2 and MARIA Reactor presentation

FINAL AGENDA

DAY 1 – Tuesday 27.9.2022

8:30 Registration, Innopoli 2, address Tekniikantie 14, Espoo

TEAMS link: [Click here to join the meeting](#) ; Meeting ID: 331 784 093 374

Passcode: xRpYYn [Download Teams](#) | [Join on the web](#)

Meeting room Edison 1-2

Day 1 – Session 1 INTRODUCTIONS – Chair Maria Oksa, VTT

8:55 – 9:00 Welcome - opening of the school, Maria Oksa

9:00 – 9:10 NOMATEN - the EU "teaming project" and the framework of the school, Jacek Jagielski

9:10 – 9:30 The CoE NOMATEN - presentation of the centre, and objectives and scientific content of the school, Mikko Alava

9:30 – 9:40 Brief introduction to NCBJ, hosting the CoE NOMATEN, Pawel Sobkowicz

9:40 – 9:50 Brief introduction to CEA, partner of the CoE NOMATEN, Gilles Moutiers and Frédéric Dollé

9:50 – 10:00 General introduction of VTT, partner of the CoE NOMATEN, and hosting the organisation of the school, Tommi Nyman

10:00 – 10:40 Coffee break

10:40 – 10:50 RG @CoE NOMATEN: Functional properties, Łukasz Kurpaska

10:50 – 11:00 RG @CoE NOMATEN: Complexity in functional material, Mikko Alava



11:00 – 11:10 RG @CoE NOMATEN: Materials structure, informatics and functions, Stefanos Papanikolaou

11:10 – 11:20 RG @CoE NOMATEN: Materials characterization, Iwona Jóźwik

11:20 – 11:30 RG @CoE NOMATEN: Radiopharmaceuticals, Marek Pruszyński

11:30 – 12:30 Round table and discussion

12:30 – 13:30 Lunch break and discussions

Day 1 – Session 2 MATERIALS SCIENCE (nuclear) – Chair Gilles Moutiers, CEA

13:30 – 14:15 The SOLEIL facility and new developments of the MARS beam line, Jean-Luc Béchade, CEA

14:15 – 14:45 XRD analyses on highly irradiated structural materials (HR XRD, XAS), Raphaele Guillou, CEA

14:45 – 15:15 Characterization of a UO₂ spent nuclear fuel by HR-XRD and HERFD-XANES on MARS beamline, Vincent Klošek, CEA

15:15 – 15:45 Study of SIMFUEL compounds in relationship with thermodynamical approaches (XRD and XAS), Christine Guéneau, CEA

15:45 – 16:00 Coffee break

16:00 – 16:30 Mechanical properties of irradiated structural materials, Janne Heikinheimo, VTT

16:30 – 17:00 Radiation damage resistance and mechanical properties of ODS-CSAs submitted to high-temperature irradiation, Sri Tapaswi Nori, NOMATEN

17:00 – 17:30 Understanding radiation damage mechanism and functional properties in high-/medium- entropy alloys, Wenyi Huo, NOMATEN

17:30 – 18:00 **PhD session**, chair Christophe Gallé, CEA

Artur Olejarz: Effect of milling time on the microstructure and mechanical properties of High-Entropy Alloys sintered by Spark Plasma Sintering technique (NOMATEN)

Magdalena Wilczopolska: Raman spectroscopy as a characterization tool for various types of graphite modified by the ion beam for nuclear applications (NOMATEN)

Kinga Suchorab: Studying corrosion mechanism in zirconium and its alloys, impact of radiation damage on the formation of zirconia polymorphs at high temperature (NOMATEN)

Agata Zaborowska: Impact of radiation damage on mechanical and structural properties of amorphous alumina coatings (NOMATEN)

Katarzyna Mulewska: Investigation of the plasticity effect and radiation damage resistance via nanoindentation in Fe-Cr alloys (NOMATEN)



Martin Madelain: study of the behaviour under irradiation of Ni-based alloys from additive manufacturing for Molten Salt Reactors (CEA)

18:00 – 18:30 Exchange time: Parallel scientific round tables and informal discussions on dedicated topics, Łukasz Kurpaska, NOMATEN, and Jean-Luc Béchade, CEA

19:15 Welcome dinner at restaurant Fat Lizard, address Tietotie 1

DAY 2 – Wednesday 28.9.2022

Day 2 – Session 3 MATERIALS SCIENCE (non-nuclear) – Chair Mikko Alava, NOMATEN

TEAMS link: [Click here to join the meeting](#) ; Meeting ID: 399 396 305 058

Passcode: aqCYLi [Download Teams](#) | [Join on the web](#)

8:30 – 08:55 *Coffee*

8:55 – 9:00 Welcome – Mikko Alava, NOMATEN

9:00 – 9:30 Iwona Jozwik: FIB-SEM application to materials studies at NOMATEN CoE

9:30 – 10:00 Kamran Karimi: Machine learning, micro-structural descriptors, and their predictive capacity of material properties: case studies of a metallic glass and a complex concentrated alloy

10:00 – 10:30 Fabrizio Rovaris: Discrete Dislocation Dynamics and Multiscale Modeling of nano- and micro-scale testing of Materials

10:30 – 10:45 Coffee break

10:45 – 11:00 PhD student introductions (5 x 3 mins)

11:00 – 11:30 Stefanos Papanikolaou: ML advances at NOMATEN

11:30 – 12:00 Silvia Bonfanti: Complex metal glasses

12:00 – 13:30 Lunch break and discussions

Day 2 – Session 4 RADIOPHARMACEUTICALS SCIENCES – Chair Frédéric Dollé, CEA

13:30 – 13:55 VTT's recombinant antibody technology: current and future applications, Kristiina Iljin, VTT

13:55 – 14:20 Radiolabeling of biomolecules via disulfide rebridging, Mylène Richard, CEA

14:20 – 14:35 PSMA ligands for radiolabeling: from bench to clinic, Urszula Karczmarczyk, POLATOM

14:35 – 14:50 Challenges in radioiodination of biomolecules, Anna Krzyczmonik, NCBJ



14:50 – 15:05 Microfluidic synthesizer iMiDEV™ in the production of ¹⁸F-radiotracers, Salla Lahdenpohja, CEA

15:05 – 15:20 Coffee break

15:20 – 15:45 Clinical trials in radiopharmacy - POLATOM's experience, Renata Mikolajczak, POLATOM (online)

15:45 – 16:10 Challenges and opportunities for utilising metal-organic frameworks (MOFs) in biological applications, Mikko Vepsäläinen, VTT

16:10 – 16:35 Fluorinated micelles encapsulating Au nanoparticles for radiotherapy, Edmond Gravel, CEA

16:35 – 17:00 Targeting the immune system with innovative immunoPET ligands: new insights to potentialize immunotherapy impact, Charles Truillet, CEA

17:00 – 17:15 Nucleolipids and their application in medicine, Swastika Tiwari, NCBJ (online)

17:15 – 17:30 Coffee break

17:30 – 18:00 PhD session

Jolanta Zaborniak: Development and validation of scoring functions for modelling interactions with targets relevant to radiopharmacy (POLATOM, *online*)

Mateusz Pocięgiel: Radiosynthesis of novel ¹³¹I-labelled 1,2,3-dithiazole-based radiopharmaceuticals for LAT-1 molecular imaging and therapy (POLATOM, *online*)

Eugénie Pincemail: Synthesis, radiolabeling and in vitro and in vivo characterization of novel P2Y₁₂ purinergic receptor radiotracers (CEA)

Sébastien Beuché: Synthesis of novel radiotracers for PET imaging of cellular dysregulation in oncology (CEA)

Ihab Shokair: Organic boron-derivative precursors for radiohalogenation of biomolecules (NCBJ)

18:00 Autumn school networking and innovation

Innopoli 2 lobby with some snacks

19:30 End of Day 2

Free time for own dinner plans and visit to Helsinki etc.





DAY 3 – Thursday 29.9.2022

Visits to labs – meeting in the Centre for Nuclear Safety (CNS), address Kivimiehentie 3, Espoo

- **Remember to bring your passports / ID cards with you!**
- **They will be checked on Thursday 29.9. at CNS before the visits**

8:30 – 9:00 Welcome and entrance formalities = passport/ID checks, VTT, Kivimiehentie 3

9:00 – 12:00 Visits

#1 VTT Centre for Nuclear Safety (CNS) ([link](#)), Kivimiehentie 3

#2 VTT Research Hall, Kemistintie 3

#3 VTT Protein production lab, Tietotie 2

#4 Aalto University Nanomicroscopy Centre ([link](#)), Puumiehenkuja 2

Visitors have been shared to the groups (list as appendix). Maximum two facilities per person.

Schedule for visits:

9:15 – 10:15 First visit place – groups 1, 2, 3 and 4

Change at CNS 10:30

10:45 – 11:45 Second visit place – groups 5, 6, 7 and 8

12:00 – 13:00 Lunch, VTT CNS building, Kivimiehentie 3, Espoo

13:00 – 14:00 MARIA Reactor presentation by Łukasz Murawski, Kierownik Działu Technologii Napromieniania (DTN), meeting room Einstein, CNS building, VTT, address Kivimiehentie 3, Espoo

TEAMS link: [Click here to join the meeting](#) ; Meeting ID: 343 904 381 382

Passcode: HoSScD [Download Teams](#) | [Join on the web](#)

14:00 End of the school



Groups for lab visits 29.9.2022, 9:15 – 10:15 First visit / Groups 1-4
VTT Centre for Nuclear Safety (CNS)
Group 1

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Tommi	Seppänen	VTT
Amil	Aligayev	NCBJ/NOMATEN
Frédéric	Dolle	CEA
Christine	Gueneau	CEA
Damian	Kalita	NCBJ/NOMATEN
Lukasz	Kurpaska	NCBJ/NOMATEN
Salla	Lahdenpohja	CEA
Katarzyna	Mulewska	NCBJ/NOMATEN
Lukasz	Murawski	NCBJ/DTN
Sri Tapaswi	Nori	NCBJ/NOMATEN
Artur	Olejarz	NCBJ/NOMATEN
Ihab	Shokair	NCBJ/NOMATEN

VTT Research hall
Group 2

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Mikko	Vepsäläinen	VTT
Silvia	Bonfanti	NCBJ/NOMATEN
Muralidhar	Chourashiya	NCBJ/NOMATEN
Witold	Chrominski	NCBJ/NOMATEN
Eric	Doris	CEA
Malgorzata	Frelek-Kozak	NCBJ/NOMATEN
Magdalena	Gaweda	NCBJ/NOMATEN
Raphaelle	Guillou	CEA
Kamran	Karimi	NCBJ/NOMATEN
Vincent	Klosek	CEA
Anna	Krzyczmonik	NCBJ/NOMATEN
Martin	Madelain	CEA
Dario	Massa	NCBJ/NOMATEN
Amirhossein	Naghdi Dorabati	NCBJ/NOMATEN
Axel	Poisvert	NCBJ/NOMATEN
Agata	Sotniczuk	NCBJ/NOMATEN
Kinga	Suchorab	NCBJ/NOMATEN
Magdalena	Wilczopolska	NCBJ/NOMATEN
Agata	Zaborowska	NCBJ/NOMATEN
Maciej	Zielinski	NCBJ/NOMATEN



VTT Protein Production lab
Group 3

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Kristiina	Iljin	VTT
Julen	Ariztia	CEA
Marie-Pierre	Heck	CEA
Daniel	Kaartinen	VTT
Urszula	Karczmarczyk	NCBJ/NOMATEN
Bakhtiyar	Mammadli	NCBJ/NOMATEN
Vilma	Ratia-Hanby	VTT
Sicong	Ren	VTT
Mylene	Richard	CEA
Charles	Truillet	CEA
Edyta	Wyszkowska	NCBJ/NOMATEN
Qinqin	Xu	NCBJ/NOMATEN

Aalto University nanomicroscopy centre
Group 4

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Aleks	Vainionpää	VTT
Jean-Luc	Bechade	CEA
Maciej	Drozd	NCBJ/NOMATEN
Cristophe	Galle	CEA
Edmond	Gravel	CEA
Leena	Hakalahti	VTT
Wenyi	Huo	NCBJ/NOMATEN
Jacek	Jagielski	NCBJ/NOMATEN
Iwona	Jozwik	NCBJ/NOMATEN
Stefanos	Papanikolaou	NCBJ/NOMATEN
Marek	Pruszyński	NCBJ/NOMATEN
Fabrizio	Rovaris	NCBJ/NOMATEN



Groups for lab visits 29.9.2022, 10:45 – 11: 45 Second visit / Groups 5-8
VTT Centre for Nuclear Safety (CNS)
Group 5

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Mika	Jokipii	VTT
Silvia	Bonfanti	NCBJ/NOMATEN
Maciej	Drozd	NCBJ/NOMATEN
Martin	Madelain	CEA
Gilles	Moutiers	CEA
Marek	Pruszyński	NCBJ/NOMATEN
Sicong	Ren	VTT
Kinga	Suchorab	NCBJ/NOMATEN
Aleks	Vainionpää	VTT
Magdalena	Wilczopolska	NCBJ/NOMATEN
Agata	Zaborowska	NCBJ/NOMATEN
Maciej	Zielinski	NCBJ/NOMATEN

VTT Research hall
Group 6

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Janne	Pakarinen	VTT
Mikko	Alava	NCBJ/NOMATEN
Amil	Aligayev	NCBJ/NOMATEN
Frédéric	Dolle	CEA
Edmond	Gravel	CEA
Marie-Pierre	Heck	CEA
Wenyi	Huo	NCBJ/NOMATEN
Jacek	Jagielski	NCBJ/NOMATEN
Daniel	Kaartinen	VTT
Damian	Kalita	NCBJ/NOMATEN
Urszula	Karczmarczyk	NCBJ/NOMATEN
Bakhtiyar	Mammadli	NCBJ/NOMATEN
Katarzyna	Mulewska	NCBJ/NOMATEN
Sri Tapaswi	Nori	NCBJ/NOMATEN
Artur	Olejarz	NCBJ/NOMATEN
Vilma	Ratia-Hanby	VTT
Fabrizio	Rovaris	NCBJ/NOMATEN
Ihab	Shokair	NCBJ/NOMATEN
Edyta	Wyszkowska	NCBJ/NOMATEN
Qinqin	Xu	NCBJ/NOMATEN



VTT Protein Production lab
Group 7

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Kristiina	Iljin	VTT
Sébastien	Beuché	CEA
Muralidhar	Chourashiya	NCBJ/NOMATEN
Cristophe	Galle	CEA
Magdalena	Gaweda	NCBJ/NOMATEN
Kamran	Karimi	NCBJ/NOMATEN
Arto	Kotipelto	VTT
Dario	Massa	NCBJ/NOMATEN
Amirhossein	Naghdi Dorabati	NCBJ/NOMATEN
Stefanos	Papanikolaou	NCBJ/NOMATEN
Eugénie	Pincemail	CEA
Kristiina	Takkinen	VTT

Aalto University nanomicroscopy centre
Group 8

<i>First name</i>	<i>Last name</i>	<i>Organisation</i>
Yanling	Ge	VTT
Witold	Chrominski	NCBJ/NOMATEN
Eric	Doris	CEA
Malgorzata	Frelek-Kozak	NCBJ/NOMATEN
Raphaëlle	Guillou	NCBJ/NOMATEN
Janne	Heikinheimo	VTT
Vincent	Klosek	CEA
Anna	Krzychmonik	NCBJ/NOMATEN
Bertrand	Kuhnast	CEA
Lukasz	Kurpaska	NCBJ/NOMATEN
Agata	Sotniczuk	NCBJ/NOMATEN
Vesa	Suolanen	VTT

