



**TRACER 9**

TRACERS AND TRACING METHODS

..... Spain 2024

**9<sup>TH</sup> INTERNATIONAL CONFERENCE  
ON TRACERS AND TRACING METHODS**

**14-16 May, 2024**

**Benicàssim, Spain**



# SCIENTIFIC PROGRAM

*from Tuesday 14<sup>th</sup> May, 2024 to Thursday 16<sup>th</sup> May 2024, in Benicàssim, Spain*

# Summary

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## CONFERENCE VENUE

### INTUR ORANGE HOTEL

The Intur Orange Hotel is specially designed to meet the expectations of the conference organizer and his attendees, offering the perfect combination of features and services to ensure the success of any professional event. With its spacious multi-purpose spaces and equipped with the latest technology, the establishment provides the ideal setting for conferences, workshops and presentations. What's more, with a privileged location close to the beach and refined catering facilities, the hotel sets an inspiring and pleasant backdrop for breaks and social activities, helping participants to relax and network in a friendly environment conducive to productivity.

The conference will take place in 3 rooms:

- Sal3n Benic3ssim for the different sessions
- Sal3n Social for coffee breaks
- Sal3n Columbretes for the poster exhibition

More information: <https://www.intur.com/en/orange-benicassim-hotel/>



### DISCOVER BENIC3SSIM!

Benic3ssim is a dynamic town where music has shaped the open, welcoming nature of its people. Its strategic location in the heart of the Coast of Azahar, where sea and mountains meet to form long white sandy beaches, makes it an ideal destination for vacation.

Furthermore, Benic3ssim enjoys a warm climate all year round, a large number and variety of interesting places to visit, excellent gastronomy and an extensive calendar of events, meaning there's always a good excuse to visit it. This city of over 19,000 inhabitants features over 6 kilometers of beautiful beaches. The Las Palmas Desert Natural park is a magnificent place, covered in palm trees, ideal for walks.







## ACCOMMODATION

Hotel Intur Orange is known for its privileged location near the beach, offering guests easy access to seaside activities and a pleasant view of the Mediterranean. It offers a range of comfortable, well-equipped rooms, some of them even offering a sea view for an immersive experience.

The hotel also offers modern facilities to meet travellers' needs, including an outdoor swimming pool, a restaurant serving local and international food, and a bar where guests can relax and enjoy refreshments after a busy day. In addition to its attractive seaside setting, Hotel Intur Orange frequently organizes activities and entertainment to keep guests entertained, creating a friendly and lively atmosphere.



**Address:** Avenida Gimeno Tomás 9, 12560 Benicàssim, Castellón

- **Phone:** +34 964 39 44 00
- **Mail:** orange@intur.com
- **Reception hours:** check-in from 16:00 and check-out before 12:00
- **Website:** <https://www.intur.com/en/>
- **Single room:** 60€/night breakfast included
- **Double or twin room:** 64€/night breakfast included
- We have negotiated room rates, but you are free to book your accommodation wherever you prefer.

If you are interested in a room at the Orange Intur Hotel, which is also the conference venue, for the 3 nights from 13 to 16 May, you have two possibilities:

- 1- You can do this at the same time as you register, by selecting the option at the end of the form.
- 2- First register for the conference, then book your room by selecting "Accommodation pack only (3 nights from 13 to 16 May)".

If you want to book extra nights, you can specify it when filling in the form.

Book your room at Orange Intur Hotel : <https://ul-propuls.events/Tracer9/accueil/166-participant-registration.html>

	Sessions	Flash poster session	Coffee Break
Room	Salón Benicàssim	Salón Columbretes	Salón Social

## WELCOME RECEPTION

A welcome cocktail is scheduled for **Tuesday May, 14<sup>th</sup>**, at the end of the first day. Enjoy a warm and friendly atmosphere at our welcome cocktail. Explore delicious tastes, share smiles and make new connections in comfortable settings. Join us for an evening of conviviality.

## GALA DINNER

The gala dinner will be held on **Wednesday May, 15<sup>th</sup>** at the MAYA restaurant.

MAYA Restaurant invites you to discover a welcoming blend of local flavors and Mexican influences. Whether you're a regular or a new friend, our space offers much more than delicious meals: it's a celebration of life, where fine dining, live entertainment and a vast outdoor terrace combine to create a unique atmosphere. Come and share laughter, lively music and unforgettable moments over dishes that delight the taste buds and the soul.

**Address:** Plaça, Polígono 7, 217, 12560 Benicàssim, Castellón, Espagne

**Phone:** +34 653 62 11 65



## CONTACT

You can contact us by filling in this form online, by email or by phone.

- **Email:** [tracer-conference@ul-propuls.fr](mailto:tracer-conference@ul-propuls.fr)
- **Phone:** +33(0)3 72 74 37 14

Tuesday 14	
	<b>Welcome</b> 9:00 - 9:45
	<b>Opening talks (30')</b> 9:45 - 10:15
	<b>Keynote lecture 1 (40')</b> 518273 - Javier CLIMENT 10:15 - 10:55
	<b>Oral Session 1 - part 1 (15')</b> Environmental applications 11:00 - 11:30
11:00	<b>Oral 1</b> - 520517 - LAURENT
11:15	<b>Oral 2</b> - 518192 - SAADAOU
11:30	<b>Coffee break (30')</b> 11:30 - 12:15
12:15	<b>Oral 3</b> - 518169 - BRISSET
	<b>Oral Session 1 - part 2</b> Environmental applications 12:30 - 13:00
12:30	<b>Oral 5</b> - 518234 - KILEL
12:45	<b>Oral 6</b> - 513115 - LE ROUX
	<b>Lunch (1:15)</b> 13:15 - 14:30
	<b>Keynote lecture 2 (40')</b> Hanna Affum 14:30 - 15:10
	<b>Oral Session 2 - part 1 (15')</b> Modelling and simulation 15:15 - 16:30
15:15	<b>Oral 7</b> - 513229 - ALJUWAYA
15:30	<b>Oral 8</b> - 522813 - LUIS-GOMEZ
15:45	<b>Oral 9</b> 513132 - DO NASCIMENTO ARRAIS
16:00	<b>Oral 10</b> - 513072 - CHANDRA
16:15	<b>Oral 11</b> - 522705 - MACIAS
	<b>Coffee break (30')</b> 16:30 - 17:00
	<b>Oral Session 2 - part 2 (15')</b> Modelling and simulation 17:00 - 17:30
17:00	<b>Oral 12</b> - 518262 - ARNAU
17:15	<b>Oral 13</b> - 513067 - JIN
	<b>Welcome reception</b> Start at 18:00

Wednesday 15	
	<b>Welcome</b> 9:30 - 10:00
	<b>Keynote lecture 3 (40')</b> 518158 - Harish PANT 10:00 - 10:40
	<b>Oral Session 3 (15')</b> Oil field evaluations and production 10:45 - 11:00
10:45	<b>Oral 14</b> - 513033 - OUTYAD
	<b>Oral Session 4 (15')</b> Mining and metallurgy 11:00 - 11:30
11:00	<b>Oral 15</b> - 511542 - DIAZ
11:15	<b>Oral 16</b> - 512661 - SMOLINSKI
	<b>Coffee break (30')</b> 11:30 - 12:15
	<b>Presentation Flash Poster</b> 5" per poster (5 posters) 12:15 - 13:15
	<b>Lunch (1:15)</b> 13:15 - 14:30
	<b>Keynote lecture 4 (40')</b> Thomas Klinka 14:30 - 15:10
	<b>Oral Session 5 - part 1 (15')</b> New tracers, techniques and equipment 15:15 - 16:00
15:15	<b>Oral 17</b> - 518278 - KILEL
15:30	<b>Oral 18</b> - 518157 - PANT
15:45	<b>Oral 19</b> - 513221 - ALJUWAYA
	<b>Coffee break (30')</b> 16:00 - 16:30
	<b>Oral Session 5 - part 2 (15')</b> New tracers, techniques and equipment 16:30 - 17:00
16:30	<b>Oral 20</b> - 516548 - MARSTEAU
16:45	<b>Oral 21</b> - 512501 - BEZUIDENHOUT
	<b>Gala dinner</b> Start at 20:00

Thursday 16	
	<b>Welcome</b> 9:30 - 10:00
	<b>Keynote lecture 5 (40')</b> 517673 - Ferenc DITROI 10:00 - 10:40
	<b>Oral Session 6 (15')</b> Radiotracers: regulatory, standardization, accreditation, certification and safety aspects 10:45 - 11:00
10:45	<b>Oral 22</b> - 513461 - JENTSCH
	<b>Coffee break (30')</b> 11:00-11:30
	<b>Oral Session 7 (15')</b> Industrial applications 11:30-12:15
11:30	<b>Oral 23</b> - 513037 - OUTYAD
11:45	<b>Oral 24</b> - 513089 - SAXENA
12:00	<b>Oral 25</b> - 507771 - THERESKA
	<b>Free lunch not covered</b> by the conference
	<b>Workshop 1:</b> Applications of virtual tracers to the CFD modelling of WWTPs: a practical approach with ANSYS
	<b>Workshop 2:</b> How hydrodynamics and layout of reactors influence the Residence Time Distribution (RTD) curves



# DETAILED SCIENTIFIC PROGRAM

## DETAILED PROGRAM



**Session 1:**  
Environmental applications



**Session 2:**  
Modelling and simulation



**Session 3:**  
Oil field evaluations and production



**Session 4:**  
Mining and metallurgy



**Session 5:**  
New tracers, techniques and equipment



**Session 6:**  
Radiotracers: regulatory, standardization, accreditation, certification and safety aspects



**Session 7:**  
Industrial applications



**Présentation Flash Poster**



**Workshop 1:**  
Applications of virtual tracers to the CFD modeling of WWTPs: a practical approach with ANSYS.

**Workshop 2:**  
How hydrodynamics and layout of reactors influence the Residence Time Distribution (RTD) curves. A comprehensive course using DTS-Pro software. Following by a presentation of aRisTiD, the new RTD software.



## REMINDER OF INSTRUCTIONS

### For all oral conferences



- Your presentation must be in English.
- Your presentation support must be saved as PowerPoint or PDF format on a USB key.
- If you want to use particular formats such as video, sending your presentation in advance is mandatory. We invite you to load your presentation before the beginning of your session, half a day before your presentation on the computer of your conference room.
- To avoid any technical bug and too long installation time, it is mandatory to use only the computer at your disposal. It will not be possible to use your personal computer.
- A remote control with laser pointer will be at your disposal.



### Keynote

- The time granted will be of 40 minutes (Including setting up)
- 30 minutes of presentation + 10 minutes of question



### Oral communication

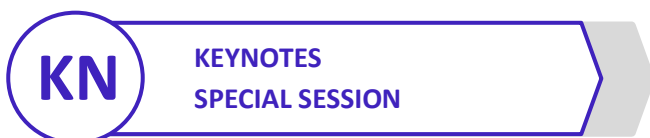
- The time granted will be of 15 minutes. (Including setting up)
- 12 minutes of presentation + 3 minutes of question

### Poster (display and flash oral presentation)



- Your poster will be presented in two different ways:
- A classic poster displayed for the duration of the congress.
- A flash oral presentation of your poster will be given during the conference. You will have 5 minutes (3 minutes for the presentation + 2 minutes for questions). You will have the possibility to prepare a powerpoint of maximum 4 slides to accompany your presentation. The presentation must be in English.
- Your poster should be printed in A0 format (84.1 cm x 118.9 cm).
- With a portrait orientation (in English).
- It is not possible to print your poster on site.
- Thank you for hanging your poster the first morning of the conference, Tuesday, May 14<sup>th</sup>, as soon as you arrive at the congress. Thus, everyone will be able to watch it during the breaks and the poster session.
- Please pick up your poster on the last day of the conference, Friday June 16<sup>th</sup>, the remaining posters will not be retained.

## SCIENTIFIC PROGRAM – KEYNOTES LECTURES



KEYNOTES LECTURES	Reference	Start time	Duration	Oral communication
	K1 518273	<b>Tuesday 14</b> 9:15 AM	40'	<b><i>WWTP Retrofitting and optimization using Tracer tests and CFD Modelling</i></b> <i>Javier Climent</i> <i>Hydrodynamic and Environmental Services (HYDRENS), Spain</i>
	K2	<b>Tuesday 14</b> 2:00 PM	40'	<b><i>The International Atomic Energy Agency's perspectives on industrial applications of radiotracer Technology: Status and trends</i></b> <i>Hanna Affum</i> <i>International Atomic Energy Agency (IAEA)</i>
	K3 518158	<b>Wednesday 15</b> 9:00 AM	40'	<b><i>Residence Time Distribution Analysis: An Excellent Approach to visualise Flows in Industrial Process Systems</i></b> <i>Harish J. Pant</i> <i>Isotope and Radiation Application Division, Bhabha Atomic Research Centre, Mumbai-400085, India</i>
	K4	<b>Wednesday 15</b> 2:10 PM	40'	<b><i>Tracer tests in hydrogeology and examples of application</i></b> <i>Thomas Klinka</i> <i>Bureau de Recherche Géologique et Minière (BRGM), Orléans, France</i>
	K5 517673	<b>Thursday 16</b> 9:00 AM	40'	<b><i>Tribometry of Machine Parts and Material Samples by Using Radioactive Tracers</i></b> <i>Ferenc Ditroi</i> <i>Institute for Nuclear Research (Atomki), Hungary</i>

## DAY 1: Tuesday 14<sup>th</sup>

# S1

ORAL SESSION 1:  
DAY 1: Tuesday 14<sup>th</sup>

Environmental applications

	Reference	Duration	Oral communication
ORAL SESSION 1 – Part 1	Oral 1 520517 10:00 AM	15'	<b>Virtual and physical tracer experiments on a raceway pond</b> <b>Julien LAURENT<sup>1</sup>, Denis FUNFSCHILLING<sup>1</sup>, Rainier HREIZ<sup>2</sup>, Julie FARINACCI<sup>1</sup> and Guilhem DELLINGER<sup>1</sup></b> <sup>1</sup> Université de Strasbourg, ENGEES, CNRS, ICube UMR 7357, France <sup>2</sup> Laboratoire Réactions et Génie des Procédés, Université de Lorraine, CNRS, LRGP, France
	Oral 2 518192 10:15 AM	15'	<b>Development of a new software for mapping by combining the density, depth and GPS positions obtained by the X-ray density Profiler Gauge XDP30</b> <b>Abdelaziz SAADAOUJ<sup>1</sup>, Abdessamad BANANE<sup>2</sup> and Jaber TOUJANE<sup>2</sup></b> <sup>1</sup> Unité techniques radiométriques, CNESTEN (Centre National de l'Énergie, des Sciences & des Techniques Nucléaires), Morocco <sup>2</sup> Département de Génie Électrique, Ecole Nationale Supérieure des Arts et Métiers, Morocco
	Oral 3 518169 10:30 AM	15'	<b>Sediment profiler for optimising dredging works and determining the nautical depth</b> <b>Patrick BRISSET<sup>1</sup>, C. COEFFIER<sup>2</sup>, Y. GACHET<sup>2</sup>, Ph. VALETTE<sup>2</sup>, S. DAHERON<sup>2</sup></b> <sup>1</sup> International Society for Tracers and Radiation Application (ISTRA), Austria <sup>2</sup> Grand Port Maritime de Nantes Saint Nazaire (GPMSN), France
	Oral 4 516929 10:45 AM	15'	<b>Estimation of hydrodispersive characteristics of the alluvium aquifer of the Loiret river</b> <b>Thomas KLINKA<sup>1</sup>, Alexis GUTIERREZ<sup>1</sup>, Nevila Jozja<sup>2</sup>, Christian Défarge<sup>2,3</sup>, Chrystelle Auterives<sup>1</sup></b> <sup>1</sup> BRGM, Orléans, France <sup>2</sup> CETRAHE, Université d'Orléans, France <sup>3</sup> ISTO, Université d'Orléans, France
ORAL SESSION 2 – Part 2	Oral 5 518234 11:00 AM	15'	<b>Radioelement mapping of the natural radionuclides on the Coast of Angola</b> <b>Kennedy Kilel<sup>1,3</sup> and Jacques Bezuidenhout<sup>2</sup></b> <sup>1</sup> Electrical and Information Engineering, University of Nairobi, Kenya <sup>2</sup> Faculty of Military Sciences Stellenbosch University, South Africa <sup>3</sup> School of Environment and Agricultural Sciences, Kenyatta University, Kenya
	Oral 6 513115 11:15 AM	15'	<b>Natural Radionuclides as tracers for investigating beach erosion and deposition patterns of Saldanha Bay, South Africa</b> <b>Rikus LE ROUX<sup>1</sup>, Jacques BEZUIDENHOUT<sup>1</sup> and Alfred SEHONE<sup>1</sup></b> <sup>1</sup> Faculty of Military Science, Stellenbosch University, Saldanha

	Reference	Duration	Oral communication
ORAL SESSION 2 – Part 1	Oral 7 513229 14:45 PM	15'	<b>Optimization of Radioactive Particle Tracking (RPT) Technique calibration process using GEANT4 simulation coupled with a semi-empirical model.</b> <b>Thaar ALJUWAYA<sup>1</sup> and Ahmed ALGHAMDI<sup>1</sup></b> <sup>1</sup> Nuclear Technologies Institute (NTI), King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
	Oral 8 522813 15:00 PM	15'	<b>Position optimization of impeller in stirred tank using Machine Learning model trained with CFD simulations</b> <b>Jaume Luis-Gómez<sup>1</sup>, Alejandro González<sup>1</sup>, Raúl Martínez-Cuenca<sup>1</sup> and Sergio Chiva<sup>1</sup></b> <sup>1</sup> Department of Mechanical Engineering and Construction, Universitat Jaume I, Spain
	Oral 9 513132 15:15 PM	15'	<b>Prediction of residence time distribution on monolith reactors to determine the effect of gas-liquid maldistribution</b> <b>Murilo Ricardo DO NASCIMENTO ARRAIS<sup>1</sup>, Hélène CHAUMAT<sup>1</sup>, Audrey DEVATINE<sup>1</sup>, Carine JULCOUR<sup>1</sup>, and Anne-Marie BILLET<sup>1</sup></b> <sup>1</sup> Laboratoire de Génie Chimique, Université de Toulouse, CNRS, INPT, UPS, France
	Oral 10 513072 15:30 PM	15'	<b>Thermal Characteristics of an Unconfined Porous Semi-Circular Cylinder in a Hybrid Nanofluid Environment</b> <b>Rajvinder Kaur<sup>1</sup>, Avinash Chandra<sup>2</sup>, Sapna Sharma<sup>3</sup> and Arvind Kumar Gautam<sup>4</sup></b> <sup>1</sup> Amity School of Business Administration, Amity University Punjab, India <sup>2</sup> Department of Chemical Engineering, Thapar Institute of Engineering and Technology, India. <sup>3</sup> School of Mathematics, Thapar Institute of Engineering and Technology, India. <sup>4</sup> Chemical Engineering Department, National Institute of Technology Hamirpur, India
	Oral 11 522705 15:45 PM	15'	<b>THREE-DIMENSIONAL NEAR-FIELD DISPERSION OF ODOURS RELATED TO EMISSIONS FROM A WASTEWATER TREATMENT PLANT OPERATING IN A URBAN ENVIRONMENT</b> <b>Aina Macias<sup>1</sup>, Raheem Nab<sup>1</sup>, Raúl Martínez<sup>1</sup>, Pablo Carratalá<sup>2</sup>, Javier Climent<sup>2</sup> and Sergio Chiva<sup>2</sup></b> <sup>1</sup> Department of Mechanical Engineering and Construction, Universitat Jaume I, Spain <sup>2</sup> Hydrens, Spain
ORAL SESSION 2 – Part 2	Oral 12 518262 16:30 PM	15'	<b>Tracer tests and CFD Modelling for a comparative study of mixing systems in Anaerobic Digestion</b> <b>Rosario ARNAU<sup>1</sup>, Javier CLIMENT<sup>1</sup>, Mairena GARCÍA-VENTOSO<sup>2</sup> and David MIGUEL-SEISDEDOS<sup>2</sup></b> <sup>1</sup> HYDRODYNAMIC AND ENVIRONMENTAL SERVICES (HYDRENS), Spain <sup>2</sup> SOCIEDAD DE FOMENTO AGRÍCOLA CASTELLONENSE, S.A (FACSA), Spain
	Oral 13 513067 16:45 PM	15'	<b>Uncertainty Evaluation of Mean Residence Time Measured Using Radiotracer</b> <b>Joonha JIN<sup>1</sup></b> <sup>1</sup> EYL, Inc., Republic of Korea

## DAY 2: Wednesday 15<sup>th</sup>

### S3

ORAL SESSION 3:  
DAY 2: Wednesday 15<sup>th</sup>

Oil field evaluations and production

ORAL SESSION 3	Reference	Duration	Oral communication
	<b>Oral 14</b> <b>513033</b> 09:45 AM	15'	<p><i>Determination of the moisture and density of compacted soils in the foundations of petroleum and hydrocarbon storage tanks by the neutron back scattering technique in comparison with Monte Carlo simulations.</i></p> <p><b>Rabie OUTAYAD<sup>1</sup></b>, <b>Yousra BEN LAZRAK<sup>2</sup></b>, <b>Tarek ELBARDOUNI<sup>2</sup></b>, <b>Abdelaziz SAADAOUJ<sup>1</sup></b>, <b>Alaa JAINIJA<sup>1</sup></b>                      and <b>Abdelghafour EZZAHRI<sup>1</sup></b></p> <p><sup>1</sup> Direction études et recherche scientifique. Division Applications Industrielles, Unité techniques radiométriques, CNESTEN (Centre National de l'Energie, des Sciences &amp; des Techniques Nucléaires), Morocco.  <sup>2</sup> Abdelmalek Essaâdi University, Université Abdelmalek Essâadi Faculté des Sciences de Tétouan Département de Physique, Morocco</p>

### S4

ORAL SESSION 4:  
DAY 2: Wednesday 15<sup>th</sup>

Mining and metallurgy

ORAL SESSION 2	Reference	Duration	Oral communication
	<b>Oral 15</b> <b>511542</b> 10:00 AM	15'	<p><i>Determining the residence time distribution in the industrial heap leaching of copper by means of radiotracers.</i></p> <p><b>Francisco DIAZ<sup>1</sup></b>, <b>Nelson BARRIENTOS<sup>2</sup></b></p> <p><sup>1</sup> General Management, Trazado Nuclear, Chile  <sup>2</sup> Research and Development, Trazado Nuclear, Chile</p>
<b>Oral 16</b> <b>512661</b> 10:15 AM	15'	<p><i>Radiotracers for investigation of the hydrometallurgical processes – INCT experience</i></p> <p><b>Tomasz SMOLINSKI<sup>1</sup></b>, <b>Andrzej CHMIELEWSKI<sup>1</sup></b></p> <p><sup>1</sup> Institute of Nuclear Chemistry and Technology, Poland</p>	



	Reference	Duration	Oral communication
ORAL SESSION 5 – Part 1	Oral 17 518278 14:10 PM	15'	<b><i>DUGS as a Tool for Measuring Natural Radionuclides as Tracers for Sediment Transport Studies</i></b> <b>Kennedy Kilel<sup>1,3</sup> Jacques Bezuidenhout<sup>2</sup>, Ian Kaniu<sup>4</sup>, Michael Gatari<sup>1</sup>, Rikus Le Roux<sup>2</sup></b> <sup>1</sup> Electrical and Information Engineering, University of Nairobi, Kenya <sup>2</sup> Faculty of Military Sciences Stellenbosch University, South Africa <sup>3</sup> School of Environment and Agricultural Sciences, Kenyatta University, Kenya <sup>3</sup> Department of Physics, University of Nairobi, Kenya
	Oral 18 518157 14:25 PM	15'	<b><i>Flow Characterization in a Cross Flow Reactor (CFR) Using Radiotracer Technique</i></b> <b>S.Goswami<sup>1</sup>, J.Biswal<sup>1</sup>, V.Kumar<sup>2</sup>, A.Quiyoom<sup>2</sup>, V.K Sharma<sup>2</sup>, P.K Rakshit<sup>2</sup>, V.Ravi Kumar<sup>2</sup> and H.J Pant<sup>1*</sup></b> <sup>1</sup> Isotope and Radiation Application Division, Bhabha Atomic Research Centre, Mumbai, 40085, India <sup>2</sup> Corporate R&D Centre, Bharat Petroleum Corporation Limited, Greater Noida 201306, India <sup>*</sup> Corresponding Author: hjpant@barc.gov.in
	Oral 19 513221 14:40 PM	15'	<b><i>Development of a novel design of Gamma-Ray Densitometry (GRD) technique for multiphase flow systems</i></b> <b>Ahmed ALGHAMDI<sup>1</sup>, Hassan NIAZ<sup>2</sup> and Thaar ALJUWAYA<sup>1</sup></b> <sup>1</sup> Nuclear Technologies Institute (NTI), King Abdulaziz City for Science and Technology (KACST), Saudi Arabia <sup>2</sup> Future Energy Technology Institute, King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
ORAL SESSION 5 – Part 2	Oral 20 516548 15:25 PM	15'	<b><i>Krypton (84Kr) as a new tracer gas for standardization test: When theoretical principles of tracer selection are not enough</i></b> <b>Elise CABASET<sup>1</sup>, Mathieu MARCHAL<sup>1</sup>, Audrey SANTANDREA<sup>1</sup>, Olivier HERBINET<sup>2</sup>, Emmanuel BELUT<sup>1</sup>, Sullivan LECHÊNE<sup>1</sup>, Stéphanie MARSTEAU<sup>1</sup>, and Jean-Pierre LECLERC<sup>1</sup></b> <sup>1</sup> INRS, Département d'Ingénierie des Procédés, France <sup>2</sup> Université de Lorraine, CNRS, LRGP, France
	Oral 21 512501 15:40 PM	15'	<b><i>Investigating the distribution of sediment using natural radionuclides through insitu measurements on the Kilindini Harbor, Mombasa Kenya</i></b> <b>Jacques BEZUIDENHOUT<sup>1</sup>, Kgomotso BOTLHOLO<sup>1</sup>, Babalwa MTSHAWU<sup>1</sup></b> <sup>1</sup> Faculty of Military Science, Stellenbosch University, South Africa

## DAY 3: Thursday 16<sup>th</sup>

# S6

ORAL SESSION 6:  
DAY 3: Thursday 16<sup>th</sup>

Radiotracers: regulatory, standardization,  
accreditation, certification and safety aspects

ORAL SESSION 6	Reference	Duration	Oral communication
	<b>Oral 22</b> <b>513461</b> 09:45 AM	15'	<p><b>International Standardization of Basic Industrial Radiotracer and Radiation Applications – Current Status</b></p> <p><b>Thorsten JENTSCH<sup>1</sup>, Jovan Thereska<sup>2</sup>, Patrick BRISSET<sup>3</sup> and Joon-Ha JIN<sup>4</sup></b></p> <p><sup>1</sup> Occupational Safety and Radiation Protection Department, HZDR, Germany  <sup>2</sup> International Society for Tracer and Radiation Applications (ISTRA), Austria  <sup>3</sup> Centre CEA de Saclay, France  <sup>4</sup> EYL, Inc., South Korea</p>

# S7

ORAL SESSION 7:  
DAY 3: Thursday 16<sup>th</sup>

Industrial applications

ORAL SESSION 7	Reference	Duration	Oral communication
	<b>Oral 23</b> <b>513037</b> 10:30 AM	15'	<p><b>Application of the Neutron Back-Scattering technique to the analysis of humidity in the raw material of the paper industry and cartoon: Measurements and Monte Carlo Simulation</b></p> <p><b>Rabie OUTAYAD<sup>1</sup>, EL Hassan MESSAOUDI<sup>2</sup>, Tarek ELBARDOUNI<sup>2</sup>, Abdelaziz SAADAOU<sup>1</sup>, Alaa JAINIJA<sup>1</sup> and Abdelghafour EZZAHRI<sup>1</sup></b></p> <p><sup>1</sup> Direction études et recherche scientifique. Division Applications Industrielles, Unité techniques radiométriques, CNESTEN (Centre National de l'Énergie, des Sciences &amp; des Techniques Nucléaires), Morocco.  <sup>2</sup> Abdelmalek Essaâdi University, Université Abdelmalek Essâdi Faculté des Sciences de Tétouan Département de Physique, Morocco.</p>
	<b>Oral 24</b> <b>513089</b> 10:45 AM	15'	<p><b>Axial Dispersion Model Prediction for Continuous Pulp Digester Using Machine Learning</b></p> <p><b>Vibhuti Sharma<sup>1</sup>, Sharad Saxena<sup>1</sup>, Avinash Chandra<sup>2</sup>, and Anu Bajaj<sup>1</sup></b></p> <p><sup>1</sup> Department of Computer Science and Engineering, Thapar Institute of Engineering and Technology, India  <sup>2</sup> Department of Chemical Engineering, Thapar Institute of Engineering and Technology, India.</p>
<b>Oral 25</b> <b>507771</b> 11:00 AM	15'	<p><b>Residence Time Distribution formulation and applications using radioactive tracers</b></p> <p><b>Jovan Thereska<sup>1</sup>, Patrick Brisset<sup>1</sup></b></p> <p><sup>1</sup> ISTRA, Jochen Rindt-Str. 33, 1230 Vienna, Austria</p>	

## SCIENTIFIC PROGRAM – PRESENTATION FLASH POSTER

FP

PRESENTATION FLASH POSTER  
DAY 2: Wednesday 15<sup>th</sup>

Reference	Duration	Oral communication
<b>FP1</b> <b>516565</b> 11:00	5'	<b><i>Cobalt as Hazardous Pollutant: Adsorption Kinetics and Thermodynamics by Dolomite</i></b> Ayse Nur ESEN, Oguzhan SACKIRAN, Sevilya HACIYAKUPOGLU Energy Institute, Istanbul Technical University, Türkiye
<b>FP2</b> <b>522897</b> 11:05	5'	<b><i>Computational model of the transport of the compound HFE-7200 as a downscaled atmospheric tracer</i></b> Marcos Granell <sup>1</sup> , Sergio Chiva <sup>2</sup> , Aina Macias <sup>2</sup> , Tania Portolés <sup>1</sup> , Joaquín Beltrán <sup>1</sup> <sup>1</sup> Research Institute for Pesticides and Water (IUPA), Universitat Jaume I, Castellón, 12071, Spain <sup>2</sup> Department of Mechanical Engineering and Construction, Universitat Jaume I, Castellón, 12071, Spain
<b>FP3</b> <b>527675</b> 11:10	5'	<b><i>Numerical experiments by Computational Fluid Dynamics to model the different geometries of activated sludge anoxic reactors</i></b> David VAURIS, Nouceiba ADOUANI, Olivier POTIER Université de Lorraine, CNRS, LRGP, F-54001 Nancy, France
<b>FP4</b> <b>513318</b> 11:15	5'	<b><i>RTD Modeling of Flow-rig Column Using DTS-pro</i></b> Louisa BOUNEMIA <sup>1</sup> , Naila Bouchera BOUCHELIT <sup>2</sup> , Amina AMHIS <sup>2</sup> , Khelifa BOUKEFFOUSSA <sup>1</sup> <sup>1</sup> Department Application of Nuclear Technique, Algiers Nuclear Research Center, Algeria <sup>2</sup> Department of Chemical Engineering, National Polytechnic School, Algier, Algeria
<b>FP5</b> <b>527681</b> 11:20	5'	<b><i>Study of the influence of activated sludge reactor hydrodynamics on antibiotic resistance development</i></b> Miguel FLÓREZ <sup>1,2</sup> , Christophe MERLIN <sup>2</sup> and Olivier POTIER <sup>1</sup> <sup>1</sup> Université de Lorraine, CNRS, LRGP, F-54001 Nancy, France <sup>2</sup> Université de Lorraine, CNRS, LCPME, F-54000 Nancy, France

PRESENTATION FLASH POSTER

TO REGISTER FOR A WORKSHOP, PLEASE COMPLETE THIS REGISTRATION FORM :

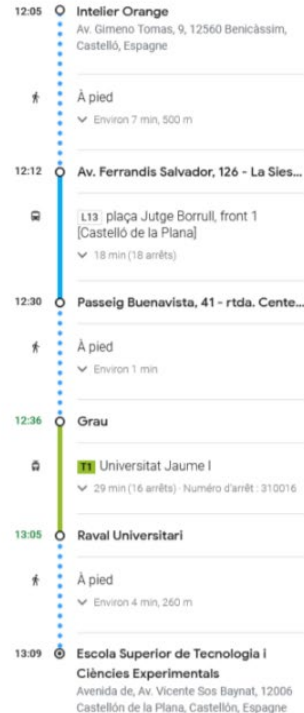
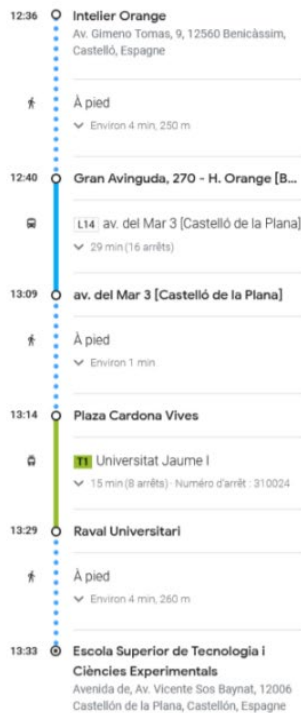
[HTTPS://DOCS.GOOGLE.COM/FORMS/D/E/1FAIPQLSCGLOJOELLRZIMSWOTECTYW72WT4G-K3KUJRMILBKRCEU5GC6Q/VIEWFORM?USP=SF\\_LINK](https://docs.google.com/forms/d/e/1FAIPQLSCGLOJOELLRZIMSWOTECTYW72WT4G-K3KUJRMILBKRCEU5GC6Q/viewform?usp=sf_link)

On Thursday May, 16<sup>th</sup>, after the end of the conference, you are invited to take part in two workshops to be held at the Escola Superior de Tecnologia i Ciències Experimentals of the Universitat Jaume I, located in Castellón de la Plana.

The address is: [Avinguda de Vicent Sos Baynat, s/n, 12006 Castelló de la Plana, Castelló, Spain.](#)

To get there, you have two options: take a cab for a journey of around 15 minutes, or opt for the bus. Here are two bus routes to get there.

If you prefer to take a cab, you can contact an available cab company to arrange your journey : [just here.](#)



## **WORKSHOP 1: Applications of virtual tracers to the CFD modeling of WWTPs: a practical approach with ANSYS**

**DATE:** Thursday May 16th, 2024

**CONTRIBUTORS:** Group of Multiphase Flow (Universitat Jaume I) and HYDRENS : Raúl Martínez, Delia Trifi, Jaume Luis, José Vilarroig, Javier Climent, Pablo Carratalá and Rosario Arnau

**LOCATION:**

- Informatics Room TD0130AI,
- Escola Superior de Tecnologies Ciències Experimentals,
- Universitat Jaume I, Castelló

**ABOUT THE WORKSHOP:**

In recent years, there has been a notable increase in scientific production related to modelling applied to wastewater treatment processes using Computational Fluid Dynamics (CFD) techniques, from basic research, through engineering design, even process optimization.

This workshop will provide a brief introduction to the theoretical background underlying CFD and its application to several industrial applications. Special focus will be made for the use of tracers in wastewater treatment plants. Three case studies will be presented, and the assistants will be able to analyze them using the software package ANSYS-CFX:

**1. Troubleshooting mixing conditions through virtual tracer techniques:**

Analysis of different design alternatives of a biological reactor inlet chamber using virtual tracers to achieve a suitable distribution of the inlet flow.

**2. UV disinfection with closed reactors:**

Study on flow reactor size and water quality on the UV disinfection in tertiary treatment.

**3. Air quality at indoors and the ventilation system performance**

Evaluation of ventilation strategies to control the pollutant gas releases of industrial processes.

**TARGET AUDIENCE:**

The workshop will be customized to serve a broad spectrum of participants, encompassing both academics and practitioners from various domains such as process and chemical engineering, consulting, plant management, and administration. Their interests and objectives may range from implementing streamlined and efficient practices in design and operations to enhancing their understanding of plant reactors and the combined use of CFD and tracers for their analysis.

**EMAIL CONTACT:**

- raul.martinez@uji.es
- javier.climent@hydrens.com



## **WORKSHOP 2: How hydrodynamics and layout of reactors influence the Residence Time Distribution (RTD) curves**

*A comprehensive course using DTS-Pro software. Following by a presentation of aRiStiD, the new RTD software.*

**DATE:** Thursday May 16th, 2024

**CONTRIBUTORS:** Olivier Potier, LRGP-CNRS-Université de Lorraine

**LOCATION:**

- Informatics Room TD0130AI,
- Escola Superior de Tecnologies Ciències Experimentals,
- Universitat Jaume I, Castelló

**ABOUT THE WORKSHOP:**

The workshop is divided in three parts.

**1. Introduction**

We'll start with an introduction to tracing and Residence Time Distribution method.

**2. Training of the use of DTS-Pro software**

It will allow to identify systemic models from experimental RTD curves. People will learn the main functions of the software.

**3. Simulations**

During the third and main part of the workshop, people will use the software to make about fifteen simulations, allowing them to understand the influence of reactor layouts on RTD curves.

Finally, people will realize they became able to qualitatively analyze experimental RTD curves and elaborate first models of studied reactors.

**EMAIL CONTACT:** [olivier.potier@univ-lorraine.fr](mailto:olivier.potier@univ-lorraine.fr)