

JULY 3-8, 2022 – LIVE and ONLINE



GREEN CHEMISTRY

LIVE AND ONLINE

POSTGRADUATE SUMMER SCHOOL

3rd-8th July 2022
Venice, Italy

Organizers:

Pietro Tundo Chairman

Fabio Aricò

Aurelia Visa

Mirabbos Hojamberdiev

Graziana Gigliuto Secretary

Alessandra Abbate Assistant Organizer

Topics:

Benign synthesis routes

Green catalysis

Alternative solvents

Renewable and green raw materials

Green chemistry for energy

Clean processes

Green Chemistry education

Info:

www.greenchemistry.school

www.gssd-foundation.org

Contacts:

postmaster@pec.gssd-foundation.org

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green.chemistry@unive.it

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REPORT

**GREEN CHEMISTRY POSTGRADUATE
SUMMER SCHOOL**

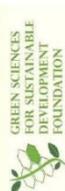
3rd-8th JULY 2022, LIVE and ONLINE

<https://www.greenchemistry.school/>

JULY 3-8, 2022 – LIVE and ONLINE

TIMETABLE

14th Green Chemistry Postgraduate Summer School Timetable 3rd-8th July 2022 VENICE – Live and ONLINE



SUNDAY 3 July		MONDAY 4 July		TUESDAY 5 July		WEDNESDAY 6 July		THURSDAY 7 July		FRIDAY 8 July	
12:00-17:00	Check-in and Registration at Campus Santa Maria	9:00-10:15	OPENING CEREMONY <i>Jane Scott's Memorial</i>	9:00-9:30	Roman Warchol Organization of Chemical Weapons(OPCW)	9:00-9:15	Eugenia Mescherova PhosAgro	9:00-9:30	Islo Borges International Younger Chemists Network (IYCN)	9:00-9:30	Car Foscari University
17:00-19:00	WELCOME TOGETHER	10:15-10:30	Coffee break	9:30-10:00	Pietro Tundo Green Sciences for Sustainable Development Foundation	9:15-9:30	PhosAgro Awards Celebration	9:30-10:15	Buing Han International Union of Pure and Applied Chemistry (IUPAC)	9:30-10:15	Marco Bella Member of Parliament of Italy
		10:30-11:30	Krzysztof Masyjaszewski (Jane Wisinger)	10:00-10:30	Buing Han (Alexei Laplin)	9:30-10:15	Alessandro Martini (Christopher Beetz)	10:30-10:45	Poster session 7 Exploitation of renewable resources Posters No. 51-62 (Fabio Arco)	10:15-11:00	Carlo Barbante (Jonathan Forman)
		11:30-12:15	Burkhard König (Jane Wisinger)	10:30-11:00	Pietro Tundo (Alexei Laplin)	10:15-10:45	Vittorio Esposito (Christopher Beetz)	10:45-10:55	Poster session 8 Exploitation of renewable resources & Health Posters No. 63-77 (Fabio Arco)	11:00-11:15	Poster session 10 Climate Change Posters No. 83-92 (Aurelia Visa)
		12:15-13:30	Lunch	11:00-11:30	Haoran Li (Alexei Laplin)	10:45-11:00	Coffee break	11:00-12:00	Coffee break	11:15-12:15	Coffee Break
		13:30-14:45	New reaction pathways Posters No. 1-9 (Aurelia Visa)	11:00-11:30	Jean-Marie Lehn (Krzysztof Masyjaszewski)	11:30-12:00	Mirabos Hojamberdiev (Christopher Beetz)	12:00-13:30	Poster Session 9 Health & Food Safety Posters no. 78-82 (Fabio Arco)	12:15-14:30	Michael Gratzel (Elaenat Allala)
		14:45-15:15	Alexei Laplin (Burkhard König)	11:30-12:15	Jean-Marie Lehn (Krzysztof Masyjaszewski)	12:00-13:00	Oliver Knappe (Christopher Beetz)	13:30-14:30	Lunch	14:30-17:00	CLOSING CEREMONY AND POSTER AWARDS
		15:15-15:45	Jane Wisinger (Burkhard König)	12:15-13:30	Lunch	13:00-13:30	Poster Session 6 Energy saving Posters No. 37-50 (Mirabos Hojamberdiev)	14:30-15:30	Fabio Arco (Mirabos Hojamberdiev)		
		15:45-16:15	Paul Anastas (Burkhard König)	13:30-14:30	Francesco Trotta (Krzysztof Masyjaszewski)	14:00-14:30	Energy saving Posters No. 37-50 (Mirabos Hojamberdiev)	15:30-16:30	Roland Allala (Mirabos Hojamberdiev)		
		16:15-16:45	Poster Session 2 New reaction pathways Posters No. 10-15 (Aurelia Visa)	14:30-15:00	Martin Müller (Krzysztof Masyjaszewski)	14:30-15:00	SOCIAL EVENT: BOAT TRIP IN THE VENICE LAGUNE	16:30-17:00	Jonathan Forman (Mirabos Hojamberdiev)		
		16:45-17:15	Coffee break	15:00-15:30	Aurelia Visa (Krzysztof Masyjaszewski)	14:00-20:00		17:00-18:00	Coffee break		
		17:15-17:45	Poster Session 3 New reaction Pathways Posters No. 16-21 (Aurelia Visa)	15:30-16:10	Poster session 4 New reaction pathways Posters No. 22-30 (Mirabos Hojamberdiev)			17:30-18:00	Konstantinos Triantafyllidis (Mirabos Hojamberdiev)		
		17:45-18:45	Poster Evaluation for PhosAgro Award	16:10-16:30	Coffee break			18:00-18:30	Natalia Tarasova (Mirabos Hojamberdiev)		
				16:30-17:00	Exploitation of renewable resources Posters No. 31-36 (Mirabos Hojamberdiev)				Emiliano Caszala (Mirabos Hojamberdiev)		
				17:00-18:00	Poster Evaluation for PhosAgro Award				Poster session 9 Health & Food Safety Posters no. 78-82 (Fabio Arco)		

JULY 3-8, 2022 – LIVE and ONLINE

FOREWORDS

The 14th Green Chemistry Postgraduate Summer School was held in hybrid mode, both online and in-person in Venice from 3rd to 8th July 2022, as a result of the still ongoing situation related to the Covid-19 pandemic and some limitations on travelers' mobility.

The Summer School was an international initiative organized and managed by the **Green Sciences for Sustainable Development (GSSD) Foundation** (www.gssd-foundation.org), a no-profit Foundation established in February 2020 and based in Venice, Italy.

A unique and peculiar endeavor of the Green Science for Sustainable Development Foundation was to financially support the attendance online and in presence to the Summer School of students coming from developing countries carefully selected on scientific merits basis. The GSSD Foundation is grateful to its Sponsors coming from all the Continents of the world for having supported this objective, and for having shown Science is and will always be a common language for all people coming from different nations and it is independent from politics.

This 14th edition of the Green Chemistry Summer Schools follows the 13 previous editions.

The event in-person took place in the classroom "Gradoni" in Santa Marta, Ca' Foscari University of Venice. The attendees in-person (51 students and about 16 professors) stayed in the Camplus

Santa Marta Apartments

(<https://www.camplusapartments.it/en/residences/venezia/camplus-santamarta>).

The event was chaired by Prof. Pietro Tundo, President of Green Sciences for Sustainable Development Foundation. The Organizing Committee included Prof. Fabio Aricó from Ca' Foscari University of Venice, Italy, Dr. Aurelia Visa from Romanian Academy "Coriolan Drăgulescu" Institute of Chemistry in Timisoara, Romania, and member of IUPAC, Dr. Mirabbos Hojamberdiev from the Secretary of the Conference, Ms. Graziana Gigliuto from Green Sciences for Sustainable Development Foundation, Italy and by Ms. Alessandra Abbate from Green Sciences for Sustainable Development Foundation.

Students attending were from 45 Countries.

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SUMMER SCHOOL COMMITTEES

CHAIR OF THE SUMMER SCHOOL

• **Pietro Tundo**, *President of Green Sciences for Sustainable Development Foundation, Venice, Italy, Secretary of IUPAC Interdivisional Committee of Green Chemistry for Sustainable Development (ICGSSD)*

LOCAL ORGANIZING COMMITTEE

- **Fabio Aricò**, *Professor of Organic Chemistry, Ca' Foscari University of Venice, Italy*
- **Aurelia Visa**, *Romanian Academy "Coriolan Drăgulescu" Institute of Chemistry – Timisoara, Romania*
- **Mirabbos Hojamberdiev**, *Uzbekistan-Japan Innovation Center of Youth, Uzbekistan Technische Universität Berlin, Germany*
- **Graziana Gigliuto**, *Green Sciences for Sustainable Development Foundation, Italy*
- **Alessandra Abbate**, *Green Sciences for Sustainable Development Foundation, Italy*

INTERNATIONAL SCIENTIFIC COMMITTEE FOR SCHOLARSHIPS GRANTS TO STUDENTS FROM DEVELOPING COUNTRIES. (FROM IUPAC - ICGCSD)

- **Florent Allais**, *Directeur de l'URD Agro-Biotechnologies Industrielles (ABI) AgroParisTech, France – Associate member of IUPAC ICGCSD*
- **Fabio Aricò**, *Ca' Foscari University of Venice, Italy*
- **Jonathan Forman**, *Science and Technology Advisor in the Global Security Technology and Policy Group under the National Security Directorate of Pacific Northwest National (PNNL), USA*
- **Mirabbos Hojamberdiev**, *Uzbekistan-Japan Innovation Center of Youth, Uzbekistan and Technische Universität Berlin, Germany*
- **Konstantinos S. Triantafyllidis**, *Aristotle University of Thessaloniki, Greece*
- **Pietro Tundo**, *President of the Green Sciences for Sustainable Development Foundation and Ca' Foscari University of Venice, Italy*

- **Aurelia Visa**, Romanian Academy, “Coriolan Drăgulescu” Institute of Chemistry, Timisoara, Romania
- **Neil Coville**, University of the Witwatersrand, Johannesburg, South Africa
- **Jane Wissinger**, Environmental & Green Chemistry, Department of Chemistry, University of Minnesota, USA
- **Natalia Tarasova**, Director, Institute of Chemistry and Problems of Sustainable Development, Mendeleev University of Chemical Technology of Russia; Corresponding Member of the Russian Academy of Sciences-Russia.

INTERNATIONAL JURY FOR THE POSTER SESSIONS IN PRESENCE. PHOSAGRO AWARDS

- **Pietro Tundo**, Chair of Interdivisional Committee of Green Chemistry for Sustainable Development and President of Green Sciences for Sustainable Development Foundation, Venice, Italy
- **Aurelia Visa**, Romanian Academy “Coriolan Drăgulescu” Institute of Chemistry – Timisoara, Romania
- **Mirabbos Hojamberdiev**, Uzbekistan-Japan Innovation Center of Youth, Uzbekistan and Technische Universität Berlin, Germany
- **Fabio Aricò**, Associated professor of Organic Chemistry, Ca’ Foscari University of Venice
- **Jane Wissinger**, Environmental & Green Chemistry, Department of Chemistry, University of Minnesota, USA – Associate member of IUPAC ICGCSD
- **Krzysztof Matyjaszewski**, Department of Chemistry Carnegie Mellon University, Pittsburgh, USA
- **Alexei Lapkin**, Professor of Sustainable Reaction Engineering at the University of Cambridge, UK
- **Burkhard König**, Professor of organic chemistry at the University of Regensburg, Germany
- **Francesco Trotta**, Professor at the Department of Chemistry, University of Turin, ITALY
- **Oliver Kappe**, Professor at Institute of Chemistry, University of Graz, Graz, AUSTRIA
- **Florent Allais**, Professor of Green Chemistry & Director, URD ABI – AgroParisTech, France,
- **Vittorio Esposito**, Environment Agency of Apulia (ARPA Puglia) Department of Taranto, Italy

INTERNATIONAL JURY FOR THE POSTER SESSIONS IN PRESENCE AND ONLINE- GREEN SCIENCE FOR SUSTAINABLE DEVELOPMENT FOUNDATION AWARDS

- **Pietro Tundo**, Chair of Interdivisional Committee of Green Chemistry for Sustainable Development and President of Green Sciences for Sustainable Development Foundation, Venice, Italy
- **Aurelia Visa**, Romanian Academy “Coriolan Drăgulescu” Institute of Chemistry – Timisoara, Romania
- **Mirabbos Hojamberdiev**, Uzbekistan-Japan Innovation Center of Youth, Uzbekistan and Technische Universität Berlin, Germany
- **Fabio Aricò**, Professor of Organic Chemistry, Ca’ Foscari University of Venice
- **Jane Wissinger**, Environmental & Green Chemistry, Department of Chemistry, University of Minnesota, USA – Associate member of IUPAC ICGCSD
- **Alexei Lapkin**, Professor of Sustainable Reaction Engineering at the University of Cambridge, UK
- **Francesco Trotta**, Professor at the Department of Chemistry, University of Turin, ITALY

- Oliver Kappe**, *Professor at Institute of Chemistry, University of Graz, Graz, AUSTRIA*
- Florent Allais**, *Professor of Green Chemistry & Director, URD ABI – AgroParisTech, France,*
- Jonathan Forman**, *Science and Technology Advisor in the Global Security Technology and Policy Group under the National Security Directorate of Pacific Northwest National (PNNL)*

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SUMMER SCHOOL

The School was held in collaboration with IUPAC - Interdivisional Committee of Green Chemistry for Sustainable Development, ICGCSD and Ca' Foscari University of Venice.

The event was endorsed by the Italian National Commission for UNESCO Roma, by the Ministry of the Ecological Transition (Ministero della Transizione Ecologica), by the Italian Council of Research CNR, by the Veneto Region and the Municipality of Venice (La Citta di Venezia-Le Città in Festa), International Year of Basic Sciences for Sustainable Development 2022, and International Younger Chemists Network IYCN.

The Summer School was sponsored by the Organization for the Prohibition of Chemical Weapons - OPCW, PhosAgro-Russia, Yale University-USA, Sasol-South Africa, NHU-China, Bracco Foundation-Italy, GreeNovator-Italy and International Union of Pure and Applied Chemistry.

Thanks to the participation of these Sponsors, 30 postgraduate students attending in presence in Venice and more than 70 students online, coming from developing countries have been awarded with a scholarship.

From developing countries students 160 applications arrived and 130 were considered eligible to attend the school after a strict selection during March made by the 9 members of the International Scientific Jury, and based on their CVs, their list of publications, the recommendation letters from their tutor and their motivations to attend the Summer School.

In total from the 200 postgraduate students selected for attendance coming from 45 different countries, 51 of them were in-person in Venice; from 24 teachers from all over the world, 16 of them in held their lectures in presence.

The rigorous selection of the participants contributed to forming a class of high cultural level students, who certainly find themselves at a point in their life where they are ready to invest their talents and scientific know-how for their future professional careers in a mature and responsible way. The top-level and diverse range of topics offered at the Summer School provided them the chance to look around, exchange their scientific knowledge and establish important links with other

participants and professors for fruitful joint projects and research activities. This was a real success for this Summer School since this opportunity will speed up the participants' careers as it occurred in the past.

The experience from the past 13 Summer Schools on Green Chemistry, held from 1997-2020 with more than 1000 students attending, tells us that young people are particularly attracted by Green Chemistry. Green Chemistry is a good key for students to look around the scientific disciplines and to decide how or where to go forward, as reported in the students' questionnaires from the present and past editions.

All the lectures were recorded and are available for registered participants on the Green Sciences for Sustainable Development Foundation's website and google drive (www.gssd-foundation.org). The recordings could also be shared with those who request them.

The Summer School hosted **8 lecture sessions** and **10 poster sessions** on the following **main topics**:

1. Exploitation of renewable resources
2. New reaction pathways
3. Energy saving
4. Food safety
5. Climate Change
7. Health

After the Summer School, all participants received a certificate of attendance.

This Summer School by Remote was of course more than ever: we wanted to have a school that can be joined in person and online for those who cannot come to Venice yet.

We engaged the participants with the outstanding scientific quality of the teachers, involving them in the discussion of the lectures and, not less important, through the poster sessions.

From the outcomes of this hybrid Summer School we will learn on how to manage the future Schools in Venice, which will become permanent; the Green Sciences for Sustainable Development Foundation will surely support and follow the activities of this initiative.

Our goal is to make the Summer School a permanent event, to be held every Summer the first week of July in Venice, and thanks to the involvement and participation of outstanding teachers and partners we are making this objective real.

JULY 3-8, 2022 – LIVE and ONLINE

THE SUMMER SCHOOL 2022 PROGRAMME

MONDAY 4 JULY MORNING

OPENING CEREMONY

Presenters :

Pietro Tundo – President of Green Sciences for Sustainable Development Foundation and Secretary of IUPAC Interdivisional Committee of Green Chemistry for Sustainable Development

Alessandro Agostinetti – Regione Veneto : Direttore Direzione Lavoro

Fabio Aricò- Delegate for internationalization at DAIS Department- Ca' Foscari University

Buxing Han- Chair of IUPAC Interdivisional Committee of Green Chemistry for Sustainable Development

Siroj Loikov- Deputy CEO PhosAgro (Moscow)

Ten. Col. Andrea Gloria- National Authority for the implementation of the Chemical Weapons Convention, Disarmament, arms control and non-proliferation Office, Ministero Affari Esteri Roma

MEMORIAL JANET SCOTT

Natalia Tarasova- Director, Institute of Chemistry and Problems of Sustainable Development, Mendeleev University of Chemical Technology of Russia (Moscow)

1st LECTURES SESSION:

Moderator: Jane Wissinger, *Distinguished Teaching Professor of Chemistry and Organic Chemistry Laboratory Director at the University of Minnesota*

-**Krzysztof Matyjaszewski**, *Department of Chemistry Carnegie Mellon University, Pittsburgh, USA*

Lecture Title: “Towards Green Atom Transfer Radical Polymerization”

-**Burkhard König**, *Professor of organic chemistry at the University of Regensburg, Germany*

Lecture title: Using visible light for more sustainable organic synthesis

MONDAY 4 JULY AFTERNOON

1st POSTER SESSION (New reaction pathways, Posters No. 1-9)

2nd LECTURES SESSION:

Moderator: Burkhard König, *Professor of organic chemistry at the University of Regensburg, Germany*

-Alexei Lapkin, *Professor of Sustainable Reaction Engineering at the University of Cambridge, UK*

Lecture Title: Artificial intelligence tools for developing greener chemical solutions

-Jane Wissinger, *Distinguished Teaching Professor of Chemistry and Organic Chemistry Laboratory Director at the University of Minnesota*

Lecture title: Green Chemistry Curriculum: Training Chemists for a Sustainable Future

-Paul Anastas, *Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment, Faculty Director, Yale University, USA*

Lecture title: The Periodic Table of the Elements of Green and Sustainable Chemistry

2nd POSTER SESSION (New reaction pathways, Posters No. 10-15)

3rd POSTER SESSION (New reaction pathways, Posters No. 16-21)

Poster Evaluation for PhosAgro Award- Meeting of the International Jury for Poster Evaluation.

TUESDAY 5 JULY MORNING

SPONSORS and INSTITUTIONS

Presenters:

Roman Warchol - Organization for Prohibition of Chemical Weapons(OPCW)

Pietro Tundo - Green Sciences for Sustainable Development Foundation

3rd LECTURES SESSION:

Moderator: Alexei Lapkin, *Professor of Sustainable Reaction Engineering at the University of Cambridge, UK*

-Boxing Han, *Professor at Institute of Chemistry, Chinese Academy of Sciences (CAS; Director of Shanghai Key Laboratory of Green Chemistry and Chemical Processes – China*

Lecture title: Conversion of CO₂ and Biomass into Chemicals and Fuels

-Pietro Tundo, *Professor of Organic Chemistry, President of Green Sciences for Sustainable Development Foundation, Venice, Italy*

Lecture title: Reaction mechanism and Gibbs energy profiles: how Green Chemistry complies with them. The case of Dimethyl Carbonate

-Haoran Li, *Professor at Department of Chemistry, Zhejiang University, China
Director of NHU R&D Center; Director of ZJU-NHU United R&D Center – China,*

Lecture title: Aerobic oxidation in vitamin industry

Moderator: Krzysztof Matyjaszewski, *Department of Chemistry Carnegie Mellon University, Pittsburgh, USA*

-Jean-Marie Lehn, *The Nobel Prize in Chemistry 1987,*

Lecture title: Perspectives in Chemistry: Molecular – Supramolecular – Adaptive Chemistry

TUESDAY 5 JULY AFTERNOON

4th LECTURES SESSION:

Moderator: Krzysztof Matyjaszewski, *Department of Chemistry Carnegie Mellon University, Pittsburgh, USA*

-Francesco Trotta, *Professor at the Department of Chemistry, University of Turin, ITALY*

Lecture Title: Exploitation of renewable resources in Polymer Chemistry

-Martin Möller, *DWI - Leibniz Institute for Interactive Materials, Aachen, Germany,*

Lecture title: The Innovation Potential of Bioinspired Materials.

-Aurelia Visa, *Senior Researcher, Romanian Academy "Coriolan Drăgulescu" Institute of Chemistry – Timisoara, Romania*

Lecture Title: Metal organic frameworks: complexity and diversity in structures and applications

4th POSTER SESSION (New reaction pathways, Posters No. 22-30)

5th POSTER SESSION (Exploitation of renewable resources, Posters No. 31-36)

Poster Evaluation for PhosAgro Award - Meeting of the International Jury for Poster Evaluation.

WEDNESDAY 6 JULY MORNING

SPONSORS and INSTITUTIONS

Presenter:

Evgenia Mescherova – PhosAgro

PhosAgro Awards Celebration

5th LECTURES SESSION:

Moderator: Christopher Brett, *Immediate Past President of IUPAC*

-Franco Barbara for Alessandro Martinis, Vice President Danieli Centro Metallics, ITALY
Lecture title: Low Carbon Emission Iron and Steel making: the technology is already available

-Vittorio Esposito, Environment Agency of Apulia (ARPA Puglia) Department of Taranto, Italy
Lecture Title: “Command-and-control vs pollution prevention in environmental policies by governmental authorities”

-Mirabbos Hojamberdiev, Senior Researcher, Uzbekistan-Japan Innovation Center of Youth, Tashkent, Uzbekistan and Technische Universität Berlin, Germany
Lecture title: Mixed-anion photocatalysts for energy conversion and environmental remediation

-Oliver Kappe, Professor at Institute of Chemistry, University of Graz, Graz, AUSTRIA
Lecture Title: Going with the Flow – The Use of Continuous Processing in Organic Synthesis

6th POSTER SESSION (Energy saving, Posters No. 37-50)

WEDNESDAY 6 AFTERNOON

SOCIAL EVENT: Boat Trip in the Venice Lagune

THURSDAY 7 JULY MORNING

SPONSORS and INSTITUTIONS

Presenter:

João Borges - International Younger Chemists Network (IYCN)

Buxing Han – ICGCSD, International Union of Pure and Applied Chemistry (IUPAC)

7th POSTER SESSION (Exploitation of renewable resources, Posters No. 51-62)

8th POSTER SESSION (Exploitation of renewable resources & Health, Posters No. 63-77)

THURSDAY 7 JULY AFTERNOON

7th LECTURES SESSION:

Moderator: Mirabbos Hojamberdiev, *Senior Researcher, Uzbekistan-Japan Innovation Center of Youth, Tashkent, Uzbekistan and Technische Universität Berlin, Germany*

-Fabio Aricò, Professor of organic Chemistry, Ca' Foscari University of Venice, Italy
Lecture title: Bio-based platform chemicals and dialkyl carbonates: synthesis, functionalization and applications

-Florent Allais, Professor of Green Chemistry & Director, URD ABI – AgroParisTech, France,

Lecture title: Biomass upgrading through the combination of Biotechnology, Green Chemistry & Downstream Process

-Jonathan Forman, *Science and Technology Advisor in the Global Security Technology and Policy Group under the National Security Directorate of Pacific Northwest National (PNNL)*

Lecture title: Chemicals of War and Peace: Arms Control, Disarmament, Non-Proliferation, and Green Chemistry?

-Konstantinos Triantafyllidis, *Professor at Department of Chemistry, Aristotle University of Thessaloniki, GREECE*

Lecture Title: Adding Value to Biorefinery and Pulp Industry Side-streams: Lignin Valorization to Fuels, Chemicals and Polymers

-Natalia Tarasova, *Director, Institute of Chemistry and Problems of Sustainable Development, Mendeleev University of Chemical Technology of Russia; Corresponding Member of the Russian Academy of Sciences-Russia.*

Lecture title: Green Chemistry within Planetary Boundaries

9th POSTER SESSION (Health & Food Safety, Posters No. 78-82)

FRIDAY 8 MORNING

SPONSORS and INSTITUTIONS

Ca' Foscari University

8th LECTURE SESSION:

Moderator: Jonathan Forman, *Science and Technology Advisor in the Global Security Technology and Policy Group under the National Security Directorate of Pacific Northwest National (PNNL)*

-Carlo Barbante, *Institute of Polar Sciences and Ca' Foscari University of Venice,*

Lecture title: Too late for 2°C? From the Paris Agreement to the Climate of Tomorrow

Moderator: Florent Allais, *Professor of Green Chemistry & Director, URD ABI – AgroParisTech, France*

-Michael Graetzel, *Director of Photonics and Interfaces (LPI), Institute of Chemical Science and Engineering Faculty of Basic Science Ecole Polytechnique Federale de Lausanne, SWITZERLAND,*

Lecture Title: “Light and energy, mesoscopic photosystems mimic photosynthesis”

10th POSTER SESSION (Climate Change, Posters No. 83-92)

FRIDAY 8 AFTERNOON

CLOSING CEREMONY AND POSTER AWARDS

Presenters :

Pietro Tundo , *President of Green Sciences for Sustainable Development Foundation*

Aurelia Visa, *Senior Researcher, Romanian Academy "Coriolan Drăgulescu" Institute of Chemistry – Timisoara, Romania*

Graziana Gigliuto, *Ca' Foscari University, Venice, Italy*

Alessandra Abbate, *Ca' Foscari University, Venice, Italy*

Lyvia Menezes, CAESB University of Brasilia, Brasilia, Brazil

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SPONSORS

The Sponsors of the Green Chemistry Postgraduate Summer School 2022 were: Organization for Prohibition of Chemical Weapons OPCW, PhosAgro Russia, Yale University, International Union of Pure and Applied Chemistry IUPAC, Sasol South Africa, NHU China, Bracco Foundation and GreeNovator.

In particular the GSSD Foundation thanks the Organization for Prohibition of Chemical Weapons for supporting seven/twelve participants in presence, NHU which supported five participants in presence, International Union of Pure and Applied Chemistry which supported four participants in presence, Sasol which supported two participants, Bracco Foundation which supported two participants, and PhosAgro for the four awarded Posters discussed in presence.

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POSTER WINNERS AWARDS

92 Posters were received, and the students had the opportunity to expose their research work at the poster sessions from Monday 4th July to Friday 8th July, for a total of 10 poster sessions. The poster sessions can be considered a highlight of the Summer School, for the originality and the diversity scientific value of the contributions, for the significant number of young people that shared their research with the other attendees and for the interest shown by the participants. During the poster awarding ceremony six participants were awarded for their posters and gave an oral presentation on their work.

There were 9 Awards: 4 by PhosAgro (500 € each) only for in person poster presenters, and 5 by the Jury of the Summer School for both online and in presence poster presenters.

The 4 in-person PhosAgro prize winners were:

Diana Garcia Pérez (Spain), Metal Phosphide nanoparticles for hydrotreatment of methyl laurate to produce green liquid fuels, Instituto de Catálisis y Petroleoquímica, CSIC, Madrid.

Fabrizio Politano (Argentina), The versatility of acetamido-TEMPO in the chemically- and electrochemically-activated oxidation of alcohols, Universidad Nacional de Córdoba

Trang Bui Thi (Vietnam), Preparation of industrial primary alcohols by a one-pot hydroboration-isomerization process from waste polyolefin pyrolysis oil, University of Antwerp, Intelligence in Process Advanced Catalysts and Solvents (iPRACS), Belgium

Karl Albright Z. Tiston (Thailand), 3D Printable Liquid Crystal Elastomers With Light-Induced Shape Transformations, Green Chemistry and Sustainability Chulalongkorn University, Thailand

The 5 in- person and online the Green Sciences for Sustainable Development Foundation prize winners were :

Domenic Pace (Australia) **Exploring Mechanisms in Iodine Catalysis**, School of Chemistry, University New South Wales, Sydney Australia.

Mahshid Nikraves (Iran) **Ethanol as a Green Solvent for the Catalytic Applications of a Heterobimetallic Compound in Tandem Transformation**, Department of Chemistry, Institute for advanced studies in Basic Sciences (IASBS), Zanjan, Iran.

Daniela M. Sboiu (Spain) **Bioplastics that grow on trees**, Instituto de Catálisis y Petroleoquímica, CSIC, Madrid, Spain.

Zikhona Tywabingeva (South Africa) **Formulation and Characterization of the Natural Fiber/Polymer Composites from Waste Pineapple Leaf Fibers**, Department of Chemistry, Faculty of Science, Nelson Mandela University, Port Elizabeth, South Africa.

Rini Larasati (Indonesia) **Synthesis of Chitosan/Ag₃PO₄/PtCl₆²⁻ as Photocatalyst for Methyl Orange Degradation**, Chemistry Department, Jenderal Soedirman University, Indonesia

The Award consists in an original print of Venice, which has been given to the winners during the Closing Ceremony and will be sent to the online winners (Mahsid Nikraves and Rini Larasati) through postalservice. The prints will be purchased from a Bookstore in Venice specialized in antiquities:<https://www.libreriaemiliana.com/>.

The winning students presented their research work with a PowerPoint presentation on the last day of the Summer School.

JULY 3-8, 2022 – LIVE and ONLINE

CLOSING CEREMONY

The Closing Remarks were given by the Chair of the Summer School, Prof. Pietro Tundo. During the Closing Ceremony an official presentation of the objective achieved during the event were given by the Organizer Professor Aurelia Visa, Senior Researcher, Romanian Academy "Coriolan Drăgulescu" Institute of Chemistry – Timisoara, Romania , who presented the data collected from the 14^o Edition of the Summer School and announced the dates for the next Summer School.

At the end of the Closing Ceremony a group photos with all the participants of the Summer School, including teachers and students, were taken. The photo can be found on the Green Sciences for Sustainable Development Foundation's website (www.gssd-foundation.org).

These and more information could be find in the Green Sciences for Sustainable Development Foundation's website (www.gssd-foundation.org)

- Proceedings (Book of Abstracts)
- Group photo
- Students' feedback
- Academic material