

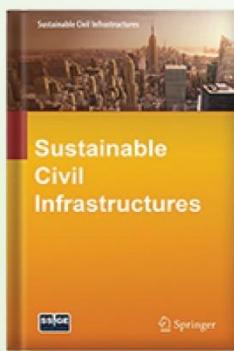
Circular Raw Materials & Recycling for Sustainability

 Faculty of Civil and Industrial Engineering, Sapienza
University of Rome, Italy

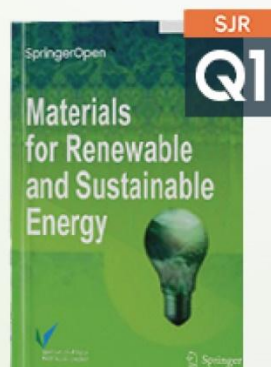
 17 - 18 June, 2026



Indexed (Scopus)



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Conference Program

About the CRAWMA 1st Edition

The conference “**Circular Raw Materials and Recycling for Sustainability (CRAWMA) – 1st Edition**” is organized by IEREK in collaboration with Faculty of Civil and Industrial Engineering, Sapienza University of Rome, and the co-partners National Union of Recovery and Recycling Paper (UNIRIMA), Gruppo Fiori, PLAST, and the Italian Network of Universities for Sustainable Development (RUS).

CRAWMA provides an interdisciplinary platform for researchers, scientists, engineers, industry leaders, economists, and policymakers to discuss innovations, strategies, and advancements in circular raw materials management, recycling technologies, urban mining, and critical raw material supply chains. It highlights cutting-edge scientific and technological developments that support the transition from linear to circular supply chains through improved recycling, recovery processes, and resource efficiency, in alignment with Sustainable Development Goal 12 (SDG 12).

The conference also explores the scientific and technological foundations of circular raw material management, with a strong focus on innovation in material recovery processes and the integration of primary and secondary raw materials. Special attention is given to closing material loops and reducing dependency on virgin resources through more efficient and sustainable systems.

By integrating scientific, technological, policy, economic, and societal perspectives, CRAWMA promotes sustainable industrial development, resilient resource systems, and environmentally responsible solutions that support the global ecological and digital transition.

In addition, the conference fosters international collaboration and knowledge exchange between academia, industry, and policymakers, encouraging the development of practical solutions and scalable technologies that can accelerate circular economy implementation at both regional and global levels.

DAY 1: 17 June 2026 – Wednesday

Faculty of Civil and Industrial Engineering, Sapienza University of Rome: [Via Eudossiana, 18, 00184 Roma RM, Italy](#)

Program Time Zone: Rome, Italy Time (GMT+2)

Sala affreschi

Online attendance Link: contact crawma@ierek-scholar.org for access

Download Latest Zoom Version: [Click here!](#)

Online Platform guide: [Click here!](#)

09:00 – 09:30 | **Welcome all/ Registration**

Delivery of Information and Networking

09:30 | **Welcome Speeches**

IEREK's CEO Word & Presentation

09:30 – 09:35 | **Dr. Mourad Amer**, CEO and Founder of IEREK & ASTI' Series Editor by Springer.

09:35 – 09:45 | **IEREK Presentation.**

Words of Host University

09:45 – 09:50 | **Prof. Carlo Massimo Casciola**, Dean of the Faculty of Civil and Industrial Engineering, Sapienza University of Rome.

09:50 – 09:55 | **Prof. Paolo De Filippis**, Director of the Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome.

Words of CRAWMA Chair & Co-Chairs

09:55 – 10:00 | **Prof. Silvia Serranti**, Conference Chair, Full Professor of Raw Materials Engineering, Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome.

10:00 – 10:05 | **Prof. Mohamed M. Chehimi**, Conference Co-Chair, Research Director Université Paris Cité & CNRS (UMR 7086), ITODYS Lab.

10:05 – 10:10 | **Prof. Enrico Boccaleri**, Conference Co-Chair, Full Professor in Inorganic Chemistry, Università del Piemonte Orientale, Italy.

Words of SWMRA Chair & Co-Chairs

10:10 – 10:15 | **Prof. Claudio Alimonti**, Conference Chair, Associate Professor, Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome.

10:15 – 10:20 | **Prof. Eric D. Van Hullebusch**, Conference Co-Chair, Full Professor of Biogeochemistry of Engineered Ecosystems, Institute of Earth Physics of Paris, France.

Word of Co-Host Organizations:

10:20 – 10:25 | **Eng. Francesco Sicilia**, Director General of National Union of Recovery and Recycling Paper (UNIRIMA, Italy).

10:25 – 10:30 | **Eng. Emiliano Cerluini**, Gruppo Fiori's representative, HSE Manager at Italferro Srl (Italy).

10:30 – 10:35 | **Dr. Alessandro Pepe**, CEO of PLAST Srl (Italy).

10:35 – 10:40 | **Dr. Eleonora Perotto**, Coordinator of the Resources & Waste Working Group of Italian Network of Universities for Sustainable Development (RUS).

10:40 – 11:00 | *Coffee Break*

11:00 | **Introducing Keynote Speakers**

Keynote Speaker 1

11:00 – 11:30 | **Prof. Giuseppe Bonifazi**, Full Professor of Raw Materials Engineering at the Department of Chemical Engineering, Materials & Environment at Sapienza University of Rome.

Speech Title: “*Circular Raw Materials and Recycling: Strategies and Innovative Technologies*”

Keynote Speaker 2

11:30 – 12:00 | **Prof. Stefano Viaroli**, Associate Professor in the Department of Earth Sciences at the University of Pisa, Italy

Speech Title: “*Groundwater Contamination by Microplastics: Current Knowledge, Limitations and Future Perspectives*”

Keynote Speaker 3

12:00 – 12:30 | **Prof. Mariachiara Zanetti**, Full Professor of Environmental Engineering at Politecnico di Torino, Italy.

Speech Title: “*Raw Materials from Industrial Waste: Evolution in Time*”

Keynote Speaker 4 (Online)

12:30 – 13:00 | **Prof. Costas Velis**, Associate Professor in Waste and Resource Engineering, Department of Civil and Environmental Engineering, Imperial College London, UK.

Speech Title: “*Negating the 'Waste' Concept: Naming and Shaming of After-Use Resources Within the Circularity Utopia*”

13:00 – 14:00 | *Lunch Break*

14:00 | *Plenary Sessions*

*All authors must commit to the time allowed for each paper presentation (15 minutes)

*A brief discussion (Q&A) is to be allowed after each session (15 minutes)

Sala affreschi

CRAWMA Session 1:

Urban Mining, Critical Raw Materials Recovery and E-Waste Valorization

Moderated by:

Oliviero Baietto

Department of Environment, Land and Infrastructure Engineering, Politecnico di Torino (Italy)

14:00 – 14:15	Recovery of Rare Earth Elements from NdFeB Permanent Magnets: Sustainable and Scalable Hydrometallurgical Process (CRAWMA-61) <u>Ana Paula Silva</u>, Isabel C. Neves, Teresa Tavares, José Pinheiro-Torres, Bruna Silva
14:15 – 14:30	Process Analysis for Lithium-Ion Battery Recycling by Re-Synthesis: Comparing Different Scenarios Including Li Recovery and Cathodes' Production from Precursors (CRAWMA-41) <u>Francesca Pagnanelli</u>, Jacopo Coletta, Marco Colasanti, Raimondo Milone, Micol Di Veroli, Pietro Altimari, Pier Giorgio Schiavi
14:30 – 14:45	Recovery of LiOH from Primary and Secondary Sources by Electrochemical Method (CRAWMA-58) <u>Pier Giorgio Schiavi</u>, Christian Quattrucci, Ludovica D'Annibale, Marco Petitta, Maurizio Barbieri, Francesca Pagnanelli, Pietro Altimari
14:45 – 15:00	E-waste Recycling by Extraction of Antimony from Brominated Plastics by Liquid-Liquid Interfacial Leaching (CRAWMA-05) <u>Rachida Khadidja Benmammar</u>, M. Gaudin, K. Riou-Nivert, V. Semetey, F. Rousseau, G. Lefèvre
15:00 – 15:15	Multianalytical Approach for the Characterization and Preconcentration of Materials from Waste Printed Circuit Boards (CRAWMA-06) <u>Giuseppe Capobianco</u>, Silvia Serranti, Giuseppe Bonifazi
15:15 – 15:30	Assessing the Economic Impacts of Smartphone Reuse and Repair (CRAWMA-17) <u>Minna Räikkönen</u>, Veera Marttila, Winnie Ruismäki, Päivi Kivikytö Reponen
15:30 – 15:45	Density Separation of Fine Fractions from Municipal Solid Waste Incineration Bottom Ash (CRAWMA-50) <u>Oliviero Baietto</u>, Quentin Wehrung, Rossana Bellopede
15:45 – 16:00	Screening of Impurities and Trace Elements in Foundry Pig Iron Feedstocks: Implications for Circular Ferrous Production (CRAWMA-13) <u>Juan Manuel Bello Bermejo</u>, Rowaida Panai Ersbo, André Månberger, Christina Windmark
16:00 – 16:15	Electrochemistry of Indium and Erbium in Methyl-Trioctylammonium Bis (Trifluoromethylsulfonyl) Imide Ionic Liquid (CRAWMA-35) <u>Martin Straka</u>, Lorant Szatmáry, František Ptíčen

16:15 – 16:30	Circularity Roadmap for Scrap-Based Steelmaking: Integrating LCA, Residue Valorisation and Critical Raw Material Considerations (CRAWMA-69) <u>Mary Osorio Baena</u> , Carlos Llovo Vidal, Francisco Tomas Ibañez Gutierrez, Felipe Calleja Cobo, Shashank Goyal, Ilchat Sabirov
16:30 – 16:45	<i>Discussions and Q&A</i>
16:45 – 17:00	<i>Short Break</i>
<u><i>Sala affreschi</i></u> CRAWMA Session 2: Sensor-Based Technologies and Advanced Characterization for Circularity	
Moderated by: Roberta Palmieri Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome (Italy)	
17:00 – 17:15	Innovative Optical Sensor-Based Solutions for Plastic Recycling (CRAWMA-08) <u>Paola Cucuzza</u> , Giuseppe Bonifazi, Giuseppe Capobianco, Silvia Serranti
17:15 – 17:30	Hyperspectral Imaging for Space Waste Circularity (CRAWMA-07) <u>Roberta Palmieri</u> , Giuseppe Bonifazi, Silvia Serranti
17:30 – 17:45	NIR-SWIR and LIPS 3D Compositional Characterization of Fiber-Reinforced Concrete from Construction and Demolition Waste (CDW) (CRAWMA-51) <u>Lorenzo Marzini</u> , Daniele Ciofini, Iacopo Osticioli, Federica Paglietti, Sergio Bellagamba, Andrea Azelio Mencaglia, Salvatore Siano, Juri Agresti

17:45 – 18:00	Near infrared Reflectance Spectroscopy as an Exploratory Authentication Tool of Recycled Textiles for Cleaner Production (CRAWMA-10) <u>Riccardo Gasbarrone</u>, Giuseppe Bonifazi, Roberta Palmieri, Silvia Serranti
18:00 – 18:15	Raman Spectroscopy for the Identification of Asbestos-Containing Materials in Demolition Waste (CRAWMA-12) <u>Alice Aurigemma</u>, Giuseppe Bonifazi, Giuseppe Capobianco, Silvia Serranti, Federica Paglietti, Sergio Bellagamba, Sergio Malinconico
18:15 – 18:30	Efficient Plastic Waste Detection in SWIR Hyperspectral Data for Optimized Collection and Sorting (CRAWMA-57) <u>Monica Moroni</u>, Marco Balsi, Soufyane Bouchelaghem
18:30 – 18:45	Digital Technologies for Land Reclamation in Surface Mining: An Integrated Review of IOT, Remote Sensing and Digital Twins for Circular Landscape Restoration (CRAWMA-31) <u>Nina Kyrylenko</u>, Artur Makhno, Iryna Patseva, and Liudmyl Herasymchuk
18:45 – 19:00	<i>Discussions and Q&A</i>
End of Day 1	

DAY 2: 18 June 2026 – Thursday

Faculty of Civil and Industrial Engineering, Sapienza University of Rome: [Via Eudossiana, 18, 00184 Roma RM, Italy](#)

Program Time Zone: Rome, Italy Time (GMT+2)

Aula 17

Online attendance Link: contact crawma@ierek-scholar.org for access

Download Latest Zoom Version: [Click here!](#)

Online Platform guide: [Click here!](#)

09:00 – 09:30 | **Welcome all/ Registration**
Delivery of Information and Networking

09:30 | **Plenary Sessions**

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Aula 17

CRAWMA Session 3:

Circular Materials, Waste Valorization and Sustainability Assessment

Moderated by:

Mohamed M. Chehimi

Research Director Université Paris Cité & CNRS (UMR 7086), ITODYS Lab

09:30 – 09:45	Pre-Consumer Textile Waste Valorization Pathways: Waste Characterization and Environmental Implications (CRAWMA-47) <u>Giorgia Arnaud</u> , Sinem Hazal Akyildiz, Gyslain Ngadi Sakatadi, Paola Marini, Daniele Del Genio, Bruno Simeone, Rossana Bellopede
09:45 – 10:00	A Win-Win Approach to Construction and Demolition Waste Recovery: An Outlook on the Chemistry (CRAWMA-32) <u>Luana Bergantin</u> , Sara Iricob, Daniela Gastaldi, Enrico Boccaleri

10:00 – 10:15	Strategies and Industrial Re-Manufacturing of Reclaimed Wood: Evaluation of Yield, Processing Barriers and Potential in the Schlossmatt Case-Study (CRAWMA-25) <u>Leonhard Seidl</u> , P. Fuchs, A. Youssef, H. Thoemen
10:15 – 10:30	Innovative Recycling Method for Converting Waste into Thermal Insulating Materials (CRAWMA-42) <u>Lucia Marsich</u> , Luca Cozzarini, Alessio Ferluga, Paolo Bevilacqua
10:30 – 10:45	Biochar: Transforming Waste into “New Black Gold” (CRAWMA-30) <u>Mohamed M. Chehimi</u> , H. Wang, B. Diop, A. Isah1, M. Tang, M. Lo, K. Jlassi
10:45 – 11:00	Biochar as a Sustainable Catalyst Support for CO2 Valorization (CRAWMA-53) <u>Abdulrahman Adamu Isah</u> , Ali Abdelaal, Kai C. Szeto, Mostafa Taoufik, Khouloud Jlassi, Aboubakr M. Abdullah, Mohamed M. Chehimi (Online)
11:00 – 11:15	<i>Discussions and Q&A</i>
11:15 – 11:30	<i>Coffee Break</i>
<u>Aula 17</u> Continuation of CRAWMA Session 3: Circular Materials, Waste Valorization and Sustainability Assessment	
Moderated by: Giuseppe Capobianco Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome (Italy)	
11:30 – 11:45	Second-Life Valorization of Post-Consumer PLA/PBS Blends: Mechanical Recycling and Biocomposites Production (CRAWMA-18) <u>Erika Palazzi</u> , Alessia Pantaleoni, Irene Bavasso, Maria P. Bracciale, Matteo Sambucci, Ilario Biblioteca, Marica Falzarano, Alessandra Polettini, Raffaella Pomi, Pietro Russo, Fabrizio Sarasini, Jacopo Tirillò

11:45 – 12:00	Turning Kombucha By-Products into Bio-Based Antimicrobial Packaging Films (CRAWMA-21) <u>Erica Sonaglia</u> , Mohammad Sharbaf, Emily Schifano, Daniela Uccelletti, Maria Laura Santarelli
12:00 – 12:15	Development of a Novel Circularity Synergy Index for the Selection of Multi-Component By-Products in Sustainable Civil Engineering (CRAWMA-64) <u>Zied Benghazi</u> , Ali Hamdane, Leila Zeghichi, Nour Rahouadja Kerbati
12:15 – 12:30	Eco-Sustainable Valorization of Waste Biomass: Green Extraction and Analytical Strategies with Cocoa Bean Shell as a Case Study (CRAWMA-33) <u>Shiva Baghani</u> , Daniela Imperio, Luca Zacchi, Vincenzo Disca, Eleonora Conterosito, Enrico Boccaleri
12:30 – 12:45	Development of Lightweight Geopolymer Thermal Insulation Panels for Energy-Efficient and Sustainable Building Applications (CRAWMA-43) <u>Maryam Harbag</u> , Ayman El Yamani, Youssef Tamraoui, Fatima Ezzahra El Abbassi
12:45 – 13:00	Eco-design of Urban shading structures based on local materials, design evaluation. Case study in Al Ain, UAE (CRAWMA-59) <u>Lindita Bande</u> , Muhammad Iqbal, Shama Anbrine, Waleed Ahmed (Online)
13:00 – 13:15	Innovative Application of Local Palm Residue in Eco-Design of Interiors. Case study in UAEU, Al Ain, UAE (CRAWMA-60) <u>Lindita Bande</u> , Muhammad Iqbal, Shama Anbrine, Hajar Hamed, Fatema Alhebsi, Shamma Alaleeli, Waleed Ahmed (Online)
13:15 – 13:30	<i>Q&A and Discussions</i>
13:30 – 14:30	<i>Lunch Break</i>
<u><i>Aula 17</i></u> CRAWMA Session 4: Circular Economy Systems, Governance, Education and Societal Transition	

Moderated by: Giovanni De Feo Department of Industrial Engineering, University of Salerno (Italy)	
14:30 – 14:45	From Demolition to Deconstruction: Barriers and Drivers of Timber Reuse in Australia, Insights from a Circular Timber Pilot Study (CRAWMA-26) <u>Angelique Milojevic</u>, Anton Nemme, Berto Pandolfo, Roderick Walden, Stefan Lie (Online)
14:45 – 15:00	Greenopoli as a Capacity-Building Model for Circular Raw Materials and Recycling Education (CRAWMA-39) <u>Giovanni De Feo</u>
15:00 – 15:15	Lost Value and Hidden Costs in Unsorted Residual MSW: Economic and Environmental Consequences of Improper Waste Separation – A Case Study (CRAWMA-40) <u>Giovanni Marmora</u>, Annapaola Fortunato, Emilia Barba, Giuseppe Arcieri, Giovanni De Feo
15:15 – 15:30	NEREIDAS project: Advancing Circular Coastal Resource Management through Education, Capacity Building, and Societal Awareness (CRAWMA-63) <u>Gabriella Calderari</u>, Silvia Serranti
15:30 – 15:45	A strategic framework for circular value chain management in the Brazilian photovoltaic sector (CRAWMA-67) <u>Carmen Brum Rosa</u>, Júlia Possebon Spellmeier, Paula Donaduzzi Rigo, Mario Fernando Mello, Marcelo Hoss
15:45 – 16:00	From Amazonian Waste to Alternative Raw Material: Rethinking Sustainable Sourcing Through Community Empowerment (CRAWMA-48) <u>Lyven Mariana Leal Chagas</u>, Hakan Karaosman, Nizar Abdelkafi, Andrea Sianesi
16:00 – 16:15	Fragment-Based Fashion Design: Waste-to-Value Pathways for CO₂ Mitigation (CRAWMA-11) <u>Giulia Pettoello</u> (Online)

16:15 – 16:30	<i>Discussions and Q&A</i>
16:30 – 16:45	<i>Short Break</i>
<u><i>Aula 17</i></u> CRAWMA Session 5: Plastics Circularity and Environmental Monitoring	
Moderated by: Paola Cucuzza Department of Chemical Engineering, Materials & Environment, Sapienza University of Rome (Italy)	
16:45 – 17:00	Community-Based Circular Model for Marine Waste Capture and Valorization in the Ciénaga de Mallorquín, Colombia (CRAWMA-23) <u>Maria Auxiliadora Iglesias-Navas</u>, Zamira Soto-Varela, Hernando Bolivar-Anillo, Diego Luis García-Estefan, Roniold Fernandez
17:00 – 17:15	Monitoring Microplastics in Caribbean Coastal Sediments: A Study at Isla Blanca, Mexico, 2022–2026 (CRAWMA-65) <u>Monica Pedraza Buitrago</u>, Mayla Ramos-Vázquez, Selef García-Orozco, Laura Hernandez-Terrones, Juan Bárcenas-Graniel, Rodolfo Silva-Casarín
17:15 – 17:30	Microplastic Presence in a Protected Coastal System: A Preliminary Assessment from La Mancha, Veracruz (CRAWMA-66) <u>Carmelo Maximiliano-Cordova</u>, Maria Luisa Martínez, & Rodolfo Silva, Debora Lithgow, O. Pérez-Maqueo
17:30 – 17:45	<i>Discussions and Q&A</i>

18:00 – 19:30 | CRAWMA Masterclass

Titled: “Microplastic Characterization: From Sampling to Advanced Polymer Identification Techniques”

Masterclass Presenters from Sapienza University of Rome – Department of Chemical Engineering, Materials & Environment (RawMaLab – Raw Materials Laboratory):

- **Giuseppe Capobianco**, Associate Professor
- **Roberta Palmieri**, Assistant Professor
- **Paola Cucuzza**, Research Fellow
- **Pietro Cocozza**, Research Fellow

Chair: Prof. Silvia Serranti

18:00 – 19:30	<u>Description/Abstract</u> Microplastic analysis is a complex task in environmental monitoring because particles differ in polymer type, size, shape, colour, ageing state and interaction with environmental matrices. Their characterization requires an integrated workflow, from sampling and separation to morphological analysis, polymer identification and data interpretation. This masterclass provides a practical overview of the main steps involved in microplastic characterization in environmental samples. It will cover sampling strategies, separation and pre-treatment procedures, and the selection of suitable analytical techniques according to matrix type, particle size and research objectives. The session will discuss conventional and advanced methods, including stereomicroscopy, FTIR spectroscopy and hyperspectral imaging, highlighting their advantages, limitations and fields of application. A specific focus will be given to multivariate data analysis and case studies, showing how chemometric and machine learning approaches can support spectral interpretation and polymer classification. The masterclass is designed for researchers, students and practitioners interested in microplastic analysis, offering a clear methodological framework and practical insights for laboratory and field applications. <u>Masterclass sessions</u> • Microplastics as emerging pollutants: environmental transport, interactions, and monitoring approaches • Sampling and separation of environmental matrices for microplastic analysis • Advanced analytical techniques for the characterization of microplastics • Multivariate data analysis for microplastic characterization: methods and case studies <i>Discussion, Q&A and Masterclass Closing</i>
<i>Closing Remarks and End of the Conference</i>	