

**INVENTING SHADES
OF GREEN**



ELECTRONICS GOES GREEN 2016+

September 7 – 9, 2016
Dahlem Cube, Seminaris Campus Hotel
Berlin, Germany

THE GOING GREEN PARTNER CONFERENCES



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TU Berlin, Research Center for
Microperipheric Technologies



Entrance to conference venue of Electronics Goes Green in 2012

WELCOME

The upcoming Electronics Goes Green conference 2016 is an outstanding event for the growing global community of scientists, product developers, and business managers working on the task of improving the environmental properties of technologies and products along the value chain of the electronics and ICT industry. Over the past years the scientific topics and industrial implementation tasks have evolved with the same dynamics as the technology itself. Advanced assembly strategies of electronics for example have increased reliability and realized environmental improvement potentials on a large scale. The recent developments in energy efficiency of power electronic devices and modules are a perfect example.

At the same time, the technological progress creates new challenges. Product types and manufacturing volumes are increasing, many products tend to get obsolete faster, the material composition of devices become more exotic, and the complexity of the manufacturing processes is practically visible in the skyrocketing costs of new labs and fabs. I would like to invite you to a scientific conference that explores the currently changing facets of today's and future green electronics. Fraunhofer IZM is very proud to be a stakeholder in this field and has been the organization behind the conference from the beginning.

The same way electronics persistently meanders between highest visibility and invisible functionality in all areas of our life, the same way we are tasked to follow and anticipate the visible and invisible ecological, economic and social implications of this growing diversity. Please open your mind to these new shades of green electronics and share your thoughts and findings at the conference.

Klaus-Dieter Lang
Electronics Goes Green 2016+
Chairman



SCOPE

- World's leading conference on electronics & the environment
- Meeting point for business developers, technology experts, researchers and policy designers
- Innovative solutions for your specific green visions

PRELIMINARY PROGRAM

TRACK Track Green Electronic Products and Applications

- » Greening information and communications technologies in industrial, mobile and home applications
- » Sustainable electronics systems for automotive, automation, and energy supply: balancing reliability, sustainability and costs
- » Measuring and communicating green ICT: standards and indicators to improve the material and energy efficiency

TRACK Circular Economy pushing repair, reuse, remanufacturing and new business models

- » Extended value chain through remanufacturing, maintenance, repair and reuse
- » Business models for circular economy: innovative strategies to close the loops
- » Measuring and improving the recyclability

TRACK Circular Economy pushing innovative WEEE treatment

- » Guiding principles: current and future WEEE policies and legislations around the world
- » Closing the information gaps between producers and recyclers
- » Smart disassembly: intelligent mechanical pre-treatment
- » Closing the loops for plastics
- » Globalized e-waste management

TRACK Circular Economy: Focus on Critical, Conflict and Precious Metals

- » Understanding stocks and flows of metals in the urban mine
- » Efficiency of the resource uses including metals for soldering
- » Recycling of precious and critical metals: pathways and technologies
- » Conflict minerals: governance and supply chain certifications

TRACK Governance: Corporate responsibility, Labelling, Standards and European Regulations

- » REACH, RoHS and chemical restrictions
- » Supply chain management: testing and database solutions for managing hazardous substances
- » Eco-design requirements: promoting eco-innovative products
- » Environmental assessments of products and services: methods and tools
- » Social responsibility: companies towards sustainable development
- » Compliance with the WEEE legislation
- » Trends and societal developments

INEMI FORUM & GET TOGETHER

TUESDAY SEPTEMBER 6 / 2:00 – 6:00 PM

iNEMI Forum



Recycling electronics alone won't save the planet (or make you rich)

Recycling of electronics has reached a point of diminishing monetary returns and new ideas and solutions for recovery are necessary. What can be done now, before regulation is established, to support a sustainable, circular economy for electronics?

iNEMI is hosting a discussion forum on the value recovery approach that needs to be implemented for the reuse and recycling of electronics and the community necessary to support maximizing the value of recovered electronics that will be essential for creating a sustainable and circular economy.

TUESDAY SEPTEMBER 6 / 6:30 – 8:00 PM

Get Together at Seminaris

Early arrival to the conference is recommended, as we will be kicking off this year's program with a welcome reception at event hotel Seminaris on the Tuesday night, September 6. Weather permitting, the event will be held outside with a BBQ to make the most of Berlin's legendary but all too short summer weather. Don't miss the chance to get the lay of the land and meet some of the other delegates before heading into the hustle and bustle of the conference program.

Seminaris CampusHotel Berlin | Takustraße 39 | 14195 Berlin



EARLY
REGISTRATION
POSSIBLE

Plenary 1: Opening Session

- 9:30 am** **Welcome**
Prof. Klaus-Dieter Lang
Conference Chair Electronics Goes Green 2016+
- 9:45 am** **Opening Remarks**
Dr. Nils F. Nissen
Technical Conference Chair Electronics Goes Green 2016+
- 9:55 am** **Introductory Keynote Track A**
A Green Electronic Products and Applications
Miquel Ballester
Fairphone, The Netherlands
- 10:05 am** **Introductory Keynote Track B**
Circular Economy: Focus on Critical, Conflict and Precious Metals
Fabrice Mathieux
European Commission, Joint Research Centre, Italy
- 10:15 am** **Introductory Keynote Track C**
Circular Economy Pushing Innovative WEEE Recycling and Business Models
Norbert Zonneveld
European Electronics Recyclers Association, The Netherlands
- 10:25 am** **Introductory Keynote Track D**
How is Circular Economy Influencing Product Design and Business Models?
Conny Bakker
TU Delft, The Netherlands
- 10:35 am** **Introductory Keynote Track E**
Does Governance Help Electronics to Go Green?
Deepali Sinha Khatriwal
Sofies, India



A.1 Greening ICT

- 11:00 am** **Is "Software Eco-design" a Solution to Reduce the Environmental Impact of Electronic Equipment?**
Marc Vautier¹, Olivier Philippot²
¹Orange, France; ²Greenspector, Nantes, France
- 11:30 am** **Material Selection Impact on Wearables**
Albert Tsang
Google Inc., United States of America
- 12:00 am** **Modular Products: Smartphone Design from a Circular Economy Perspective**
Karsten Schischke¹, Marina Proske¹, Nils F. Nissen¹, Klaus-Dieter Lang^{1,2}
¹Fraunhofer IZM, Berlin, Germany; ²Technische Universität Berlin, Berlin, Germany

D.1 Actions for Circular Economy

- 11:00 am** **Maturing Abilities to Embrace the Circular Economy**
Daniela C. A. Pigosso^{1,2}, Tim C. McAloone^{1,2}
¹Technical University of Denmark, Kgs. Lyngby, Denmark; ²essensus, Kgs. Lyngby, Denmark
- 11:30 am** **Cleaning, Closing and Slowing the Loop: the Environmental Imperative for Innovation in the IT Sector**
Maddy Cobbing¹, Gary Cook, Iza Kruszewska³, Chih An Lee⁴, Manfred Santen⁵, Melissa Shin⁶
¹Greenpeace Detox Campaign, Stroud, UK; ²Greenpeace US, San Francisco, US; ³Consultant, Lewes, UK; ⁴Greenpeace East Asia, Taipei, Taiwan; ⁵AGreenpeace e.V., Hamburg, Germany; ⁶Greenpeace International, London, UK
- 12:00 pm** **An Action Plan on Circular Economy: Outlook for the Portable Power Industry**
Hans Craen
EPBA – European Portable Battery Association, Belgium

E.1 REACH / Chemicals Restrictions

- 11:00 am** **The EU Chemical Policy, Innovation and Circular Economy – Can the Trade-off Be Solved?**
Riccardo Corridori
COCIR, Brussels, Belgium
- 11:30 am** **Managing Compliance with New REACH Obligations in the Electrotechnical Industry**
Aidan Turnbull
BOMcheck, United Kingdom
- 12:00 pm** **How to Avoid Regrettable Chemical Substitution**
Hans Wendschlag
Hewlett-Packard Inc., Stockholm, Sweden

12:30 pm – 1:30 pm **LUNCH BREAK**

A.2 Mobile ICT

1:30 pm Determination of Potential Environmental Impact of Smart Phone

Youngchai Heo, Daesik Bae, David Scuderi, Chiyoung Oh, Youngjin Suh
Samsung Electronics, Republic of South Korea

2:00 pm Experts View on the Sustainability of the Fairphone 2

Marina Prose^{1,3}, Karsten Schischke¹, Philipp Sommer², Tina Trinks⁴, Nils F. Nissen¹, Klaus-Dieter Lang^{1,3}
¹Fraunhofer IZM, Berlin, Germany; ²Deutsche Umwelthilfe, Berlin, Germany; ³Technische Universität Berlin, Berlin, Germany; ⁴Fairphone B.V., Amsterdam, The Netherlands

2:30 pm A Case Study in Quantitative Evaluation of Resource Efficiency

Nozomu Mishima, Tomoaki Kitajima
Akita University, Akita, Japan

3:00 pm Water Footprinting for Electronic Products: Lessons Learned from a Water Footprint Case Study of a Notebook

Markus Stutz¹, Stephanie Schafer², Michael Spielmann³, Melissa Zgola⁴
¹Dell, Germany; ²Dell, US; ³Quantis, Germany; ⁴Quantis, US

B.2 Understanding Stocks and Flows of Critical Metals

1:30 pm ProSUM: Prospecting Secondary Raw Materials in the Urban Mine and Mining Waste

Jaco Huisman¹, Sarah Downes², Lucia Herreras³, Patrick Wäger⁴, Daniel Cassard⁵, Susanne Rotter⁶, Maria Ljunggren Söderman⁷, Perrine Chanceler⁶, Paul Mähltz⁶

¹United Nations University, Germany; ²Repic Ltd, United Kingdom; ³WEEE Forum, Brussels, Belgium; ⁴EMPA, St. Gallen, Switzerland; ⁵Bureau de Recherches Géologiques et Minières (BRGM), Orléans, France; ⁶Technische Universität Berlin, Berlin, Germany; ⁷Chalmers University, Gothenburg, Sweden

2:00 pm Trends in Electronic Products – The Canary in the Urban Mine?

Colton E. Bangs, Christina E.M. Meskers, Thierry Van Kerckhoven
Umicore Precious Metals Refining, Belgium

2:30 pm Critical Metals in Embedded Electronics from Swiss Passenger Vehicles

Eliette Restrepo^{1,2}, Amund N. Løvik¹, Patrick Wäger¹, Rolf Widmer¹, Daniel B. Müller²
¹Empa, Dübendorf, Switzerland; ²Norwegian University of Science and Technology (NTNU), Norway

3:00 pm Flows and Stocks of Critical Materials in Batteries: Data Collection and Data Uses

Perrine Chanceler¹, Paul Maehlitz¹, Claude Chanson², Peter Binnemans³, Jaco Huisman⁴, Nils F. Nissen⁵, Klaus-Dieter Lang^{1,5}

¹Technische Universität Berlin, Berlin, Germany; ²Recharge, Brussels, Belgium; ³Eucobat, Brussels, Belgium; ⁴United Nations University, Bonn, Germany; ⁵Fraunhofer IZM, Berlin, Germany

C.2 WEEE Towards Circular Economy

1:30 pm What Hampers WEEE from Becoming Circular?

Norbert Zonneveld
European Electronics Recyclers Association (EERA), The Netherlands

2:00 pm Is the Present Business Model for WEEE Recycling Working in the Circular Economy?

Rasmus Bergström
European Electronics Recyclers Association (EERA), The Netherlands

2:30 pm WEEE Plastics Going Circular....

Chris Slijkhuis
Müller-Guttenbrunn GmbH, Amstetten, Austria

3:00 pm iNEMI Project for Value Recovery from End-of-Life Electronics

William L. Olson², Wayne E. Rifer¹, Carol Handwerker³
¹Green Electronics Council, United States of America; ²Seagate Technology, United States of America; ³Purdue University, West Lafayette, IN, United States of America

D.2 Business Models for Circular Economy (1/2)

1:30 pm Building Extended Value Chains: Lessons from Swedish ICT Repair and Resale 'Gap Exploiters' for Original Equipment Manufacturers

Julia L.K. Nußholz, Katherine A. Whalen
Lund University, Lund, Sweden

2:00 pm Closed-Loop Innovation for Mobile Electronics – the Business Model Innovation Approach of the sustainablySMART Project

Max Regenfelder
ReUse e.V. (gemeinnützig), Berlin, Germany

2:30 pm Product Ownership 2.0: An Overview of Alternative Transaction Models for Mobile Connected Devices

Flora A. Poppelaars¹, Conny A. Bakker¹, Jo M.L. van Engelen^{1,2}
¹TU Delft, Delft, the Netherlands; ²University of Groningen, Groningen, the Netherlands

3:00 pm Front-Running Circular Economy: the Medical Imaging Devices Sector – What it Takes to Move from a Linear Economy to a Circular One

Zhen Wu
CO CIR, Brussels, Belgium

E.2 Solutions for Chemicals Supply Chain Management (1/2)

1:30 pm Management of Hazardous Substances

Rob Guzzo, Mike Werner, Art Fong, Thomas Ebert
Apple, Cupertino, United States of America

2:00 pm Automated Chemical Hazard Assessment

Kristopher Wehage², Panan Chenhansa², Julie M. Schoenung¹
¹University of California-Irvine, United States of America; ²University of California-Davis, United States of America

2:30 pm Using EN 50581 Risk Based Approach to Manage Compliance to the Four New RoHS Phthalates by July 2019

Aidan Turnbull¹, Lutz-Guenther Scheidt², Lucas Dann²
¹Thinkstep Compliance, United Kingdom; ²Thinkstep AG, Leinfelden-Echterdingen, Germany

3:00 pm Evolution of U.S. Chemicals Regulation: Updating the Toxic Substances Control Act for the 21st Century

Fern Abrams
IPC - Association Connecting Electronics Industries, United States of America



A.3 Green ICT @ Home

4:30 pm

Intelligent Occupancy-Driven Thermostat by Dynamic User Profiling

Yannick De Bock¹, Andres Auquilla^{1,2}, Karel Kellens¹, Ann Nowé³, Joost R. Duflou¹
¹KU Leuven, Department of Mechanical Engineering, Belgium; ²University of Cuenca, Department of Computer Science, Ecuador; ³Vrije Universiteit Brussel, Computational Modeling Lab, Belgium

5:00 pm

Environmental Impact of Personal-Use ICT Services for Different Lifestyles

Tomomi Nagao, Minako Hara, Shinsuke Hannoé
 NTT, Tokyo, Japan

5:30 pm

Assessing ICT's Enabling Effect Through Case Study Extrapolation – the Example of Smart Metering

Jens Malmodin¹, Vlad Coroama², Pernilla Bergmark¹, Craig Donovan¹
¹Ericsson Research, Sweden; ²KTH Royal Institute of Technology, Stockholm, Sweden

B.3 Using Critical Metals Efficiently

4:30 pm

Substitution as a Strategy for Reducing the Criticality of Raw Materials for Environmental Technologies

Matthias Buchert¹, Winfried Bulach¹, Stefanie Degreif¹, Siddharth Prakash¹, Siegfried Behrendt²
¹Oeko-Institut, Darmstadt, Germany; ²Institut für Zukunftsstudien und Technologiebewertung IZT, Berlin, Germany

5:00 pm

Circular Economy as a Means to Efficient Use of Scarce Metals?

Hampus Korhan André, Maria Ljunggren Söderman, Anne-Marie Tillman
 Chalmers University, Gothenburg, Sweden

5:30 pm

The Material Profiles of Current Generation Smartphones

Thorsten Hartfeil, Sven Grieger, Arne Grünewald, Anna-Lisa Bachmann, Konrad Güth, Carsten Gellermann, Rudolf Stauber
 Fraunhofer Project Group Materials Recycling and Resource Strategies IWKS, Germany

C.3 Guiding Principles for WEEE Policy

4:30 pm – 6:00 pm

Step – Developing Legislative Principles for e-waste Policy in Developing and Emerging Countries

Jonathan Perry¹, Eelco Smit²
¹Dell, United Kingdom; ²Philips, Netherlands

Guiding Principles to Develop e-waste Management Systems and Legislation

Eelco Smit¹, Federico Magalini²
¹Philips International B.V., The Netherlands; ²United Nations University

Open Loop Recycling and Disposal Options for Lead Glass from Cathode Ray Tubes

Eliette Restrepo¹, Rolf Widmer¹, Mathias Schlupe²
¹Empa, Dübendorf, Switzerland; ²World Resources Forum, St. Gallen, SwitzerlandModerated

Moderated Discussion on Guiding Principles for WEEE Policy

Interactive
Session

D.3 Business Models for Circular Economy (2/2)

4:30 pm

The Circular Economy and Service-dominant Logic in the Electronics Sector

Scott Butler
 European Recycling Platform

5:00 pm

Business Models: Innovative Value Creation

Malcolm Waddell
 WRAP, Banbury, United Kingdom

5:30 pm

Circular Economy in the Electronics Sector: A Holistic Perspective

Margarida Gama, Constantin Herrmann
 thinkstep AG, Leinfelden-Echterdingen, Germany

E.3 Solutions for Chemicals Supply Chain Management (2/2)

4:30 pm

The Philips Supply Chain Solution Joins the Global Circular Economy

Daniel Patrick Cronin
 Pooling Partners, Eck en Wiel, The Netherlands

5:00 pm

Combination of Data Base Systems and Material Assay Testing: Answer Increasingly Complex Material Related Questions with Confidence

Michael Riess¹, Peter Müller²
¹VDE Testing and Certification Institute, Frankfurt, Germany; ²Hewlett Packard Enterprise, Böblingen, Germany

5:30 pm

Comply with Existing and Evolving Environmental Legislation – Reduce Effort for the Supply Chain (Including Your Company) – Mitigate Risk of Non-compliance

Andreas Schifflleitner¹, Torsten Gerl², Katie Boehme²
¹KERP Center of Excellence Electronic & Environment GmbH, Vienna, Austria; ²iPoint-systems GmbH, Reutlingen, Germany

Wasserwerk-Berlin | Hohenzollerndamm 208a | 10717 Berlin



Conference Dinner at Wasserwerk (see also p. 30)

Buses to the evening reception at Wasserwerk leave from the front of the hotel, starting at 6:30 pm. The last bus leaves at 6:50 pm. Please make sure to be there on time as otherwise you will have to make your own way to the conference dinner.

A.4 Applications: Improving Electronic Products

8:30 am Smart Electrical Connectors and Connecting Technologies for Industrial Applications and its Assessment of Relevant Environmental Impacts

Christian Wegener¹, Frank Schiefelbein¹, Frank Ansorge², M. Eng. Christian Baar², Oliver Meier³, Jan Stefan Michels⁴, Roland Mödinger⁵

¹Siemens AG, Berlin, Germany; ²Fraunhofer IZM, Oberpfaffenhofen-Weßling, Germany;

³Finke Elektronik GmbH, Waldkirch, Germany; ⁴Weidmüller Interface GmbH & Co. KG, Detmold, Germany; ⁵ERNI Production GmbH & Co. KG, Adelberg, Germany

9:00 am Re-Design of a Digital Voice Recorder to Meet the Needs of Circular Economy – Status Analysis

Rainer Pamminger¹, Stefan Kuso¹, Wolfgang Wimmer¹, Gerhard Podhradsky²

¹Technische Universität Wien, Wien, Austria; ²Speech Processing Solutions GmbH, Wien, Austria

9:30 am Designing Major Appliances: a Decision Support Model

Eleonora Fiore, Paolo Tamborini, Maria Franca Norese

Politecnico di Torino, Turin, Italy

B.4 Recycling of Complex Metal Mixes

8:30 am Challenges for Critical Raw Material Recovery from WEEE – the Case Study of Gallium

Maximilian Ueberschaar, Sarah Otto, Vera Susanne Rotter

Technische Universität Berlin, Berlin, Germany

9:00 am Future Perspectives for WEEE Recycling – Dynamic Evaluation of the Mobile Phones and Smartphones Waste Stream

Nicoleta Gurita, Jan C Bongaerts, Magnus Fröhling

TU Bergakademie Freiberg, Freiberg, Germany

9:30 am Resource Efficient and Certified Recycling of Copper and Precious Metals Fractions from WEEE material at Aurubis

Andreas Nolte

Aurubis AG, Hamburg, Germany

C.4 Plastics – Sorting and Recycling

8:30 am Evaluation of Plastic Sorting for Recycling

Jef R. Peeters¹, Paul Vanegas^{1,2}, Wim Dewulf¹, Joost R. Duflou¹

¹KU Leuven, Department of Mechanical Engineering, Belgium; ²University of Cuenca, Centre for Environmental Studies, Cuenca, Ecuador

9:00 am PC/ABS from Shredded Waste Electrical and Electronic Equipment

Arthur Schwesig², Brian Riise¹

¹MBA Polymers Inc., USA; ²MBA Polymers Austria Kunststoffverarbeitung GmbH, Austria

9:30 am Recovery of PC/ABS from WEEE Plastic Shred by CreaSolv Process

Martin Schlummer, Fabian Wolff, Andreas Mäurer

Fraunhofer IVV, Freising, Germany

D.4 Measuring the Product Lifetime

8:30 am Developing an Indicator Setup to Measure Life-Cycle Conditions of Electronic Products

Janis Winzer¹, Eduard Wagner², Otmar Deubzer¹, Max Marwede², Lena Reichgardt¹, Rafael Jordan¹, Nils F. Nissen¹, Klaus-Dieter Lang¹

¹Fraunhofer IZM, Berlin, Germany; ²Technische Universität Berlin, Berlin, Germany

9:00 am

Analysis of Durability and Repairability of Dishwashers

Paolo Tecchio¹, Fulvio Ardente¹, Fabrice Mathieux¹, Laura Talens Peiro¹, Sepp Eisenriegler²

¹European Commission - Joint Research Centre, Italy; ²Reparatur-und Service-Zentrum R.U.S.Z., Vienna, Austria

9:30 am

Consumers' Expectations for Product Lifetimes of Consumer Durables

Masahiro Oguchi¹, Tomohiro Tasaki¹, Ichiro Daigo², Tim Cooper³, Christine Cole³, Alex Gnanapragasam³

¹National Institute for Environmental Studies, Tsukuba-City, Ibaraki, Japan; ²The University of Tokyo, Tokyo, Japan; ³Nottingham Trent University, Nottingham, UK

E.4 Eco-Design Requirements / ErP Regulation

8:30 am Ecodesign with Extended Product Scope on the Example of Enterprise Servers

Anton Berwald¹, Benoît Tinetti¹, Lutz Stobbe², Nils Nissen², Hannes Zedel²

¹Deloitte, France; ²Fraunhofer IZM, Berlin, Germany

9:00 am

A Regulatory Approach for Potential Energy Efficiency Requirements on Computer Servers

Davide Polverini, Paolo Tosoratti

European Commission, Brussels, Belgium

9:30 am

Slashing the Hydra: Reducing Allowances in MEPS for Complex Set Top Boxes

Hans-Paul Siderius

Netherlands Enterprise Agency, The Netherlands



A.5 Applications: Automotive and Transportation

- 10:30 am Sustainability in Automotive Industry: Electromobility and its Challenges**
Abdalla Youssef¹, Ingo Birner¹, Andreas Middendorf², Klaus-Dieter Lang²
¹BMW Group, Munich, Germany; ²Technische Universität Berlin, Berlin, Germany
- 11:00 am Development of a Demand Forecasting Model for Automotive Electric Component Remanufacturing**
Mitsutaka Matsumoto¹, Yasushi Umeda², Shuto Tsuchiya²
¹AIST, Tsukuba, Japan; ²The University of Tokyo, Tokyo, Japan
- 11:30 am Automotive Lighting Facing the Design Trend: From Former Basic Conception to Reliable and Sustainable Advanced Development.**
Yves Dubois, Thomas Krzesaj
Valeo, Meslin l'Évêque, Belgium
- 12:00 pm Environmental Analysis as a Basis for Ecodesigned Products**
Mélanie Bordignon, Vanessa Lhopital
Alstom, Villeurbanne, France

B.5 Recycling of Critical Metals - Pathways

- 10:30 am Improving Recycling Pathways of Critical Materials**
Rudolf Auer, Sarah Chandler, Jeff Dahmus, Charissa Rujanavech, Irina Ostwald
Apple, Munich, Germany,
- 11:00 am Critical Raw Materials Closed Loop Recovery**
Malcolm Waddell
WRAP, Banbury, United Kingdom
- 11:30 am Environmental and Economic Assessment of Critical Metals Recovery**
Toon Ansems, Arjan van Horssen, Stijn Dellaert
TNO, Utrecht, the Netherlands
- 12:00 pm Recycling LED Retrofit Lamps**
Xavier Lantoinette, Laure Morice, Romain Lesage
RECYLUM, Paris, France

C.5 Plastics – Closing the Loop

- 10:30 am A Concrete Success of Circular Economy: Closing the Loop on Plastics from WEEE**
Ingrid Tams¹, Marianne Fleury², Thomas Van Nieuwenhuysse²
¹Groupe SEB, Écully, France; ²Eco-systèmes, Courbevoie, France
- 11:00 am Electrostatics Overcomes the Limits for WEEE Plastics Recycling**
Rainer J. Koehnlechner
Hamos GmbH, WERSAG GmbH & Co KG, Germany
- 11:30 am Guidelines Designing with Recycled Plastics-increasing Resource Efficiency in High-end Applications**
Tanya Nimalasuriya¹, Ingeborg Gort², Eelco Smit³, Abel Gerrits⁴
¹Océ, Venlo, the Netherlands; ²Partners for Innovation; ³Philips; the Netherlands, ⁴Universiteit Twente, Twente, the Netherlands

D.5 Extending the Product Lifetime

- 10:30 am Mind the Gap Exploiter; Circular Business Models for Product Life Extension**
Marcel C. Den Hollander, Conny A. Bakker, E.J. Hultink
TU Delft, Delft, Netherlands
- 11:00 am Service Lifetime and Disposal Pathways of Business Devices**
Esther Thiébaud¹, Marie Brechbühler Peskova², Lorenz M. Hilty^{1,3}, Mathias Schluep⁴, Martin Faulstich⁵
¹Empa, St. Gallen, Switzerland; ²BFH, Bern, Switzerland; ³UZH, Zurich, Switzerland; ⁴WRF, St. Gallen, Switzerland; ⁵CUTEC Institute, Clausthal-Zellerfeld, Germany
- 11:30 am Obsolescence of Electronics - the Example of Smartphones**
Marina Proske^{1,2}, Janis Winzer¹, Max Marwede², Nils F. Nissen¹, Klaus-Dieter Lang^{1,2}
¹Fraunhofer IZM, Berlin, Germany; ²Technische Universität Berlin, Berlin, Germany
- 12:00 pm Paradigm Shift in Green IT – Extending the Life-Times of Computers in the Public Authorities in Germany**
Siddharth Prakash¹, Andreas Köhler¹, Ran Liu¹, Lutz Stobbe², Marina Proske^{2,3}, Karsten Schischke²
¹Oeko-Institut e.V., Freiburg, Germany; ²Fraunhofer IZM, Berlin, Germany; ³Technische Universität Berlin, Berlin, Germany

E.5 Tools for Environmental Assessment

- 10:30 am Developing Carbon Footprint Calculation Software for Display Industry in Taiwan**
Jahau Lewis Chen¹, Wang-Chih Chen¹, Andy Kuo²
¹National Cheng Kung University, Taiwan; ²Innolux Corporation, Taiwan
- 11:00 am Methods to Calculate GHG Reduction Contributions of Electronic Components**
Ryo Yokoyama, Tetsuya Kuwashima, Yasuyuki Fujioka, Masaru Hirose
TDK Corporation, Japan
- 11:30 am Spreadsheet Based LCA of Electronics: Case Study of a Smart Home Device**
Julian Christoph Maruschke, Matthias Harsch
LCS Life Cycle Simulation GmbH, Backnang, Germany

12:30 pm – 1:30 pm LUNCH BREAK



A.6 Provoquium

1:30 pm –
3:00 pm

This session will challenge commonly held convictions on environmental issues and encourage us to come up with better solutions by taking a fresh look at things we believe to be true. In short 3-minute-presentations, the speakers will brain-shake traditional thinking about the environment. Will you agree with what they have to say? Or will the speakers provoke objections?

Attend the Provoquium, if you like controversial discussion and thinking outside of the box with a similar pace to the now widely known science slams!

B.6 Recycling of Critical Metals – Technologies

1:30 pm

A Green Method for Recycling Materials from Liquid Crystal Display Panel

En Ma
Shanghai Polytechnic University, Shanghai, China

2:00 pm

Recovery of Bromine and Antimony from WEEE Plastics

Martin Schlummer, Lorenz Popp, Fabian Trautmann, Andreas Mäurer
Fraunhofer IVV, Freising, Germany

2:30 pm

RECLAIM Project: Recovery of Yttrium and Europium from Electronic Waste, a New Hydrometallurgical Process

Vicente Lopez¹, Carlos Alvarez¹, Serena Sgarioto², Dorleta Guardo³
¹Tecnicas Reunidas, Madrid, Spain; ²Relight, Rho, Italy; ³Indumetal Recycling, Asua-Erandi, Spain

C.6 Smart Disassembly

1:30 pm

Intelligent Disassembly of Components from Printed Circuit Boards to Enable Re-use and more Efficient Recovery of Critical Metals

Bernd Kopacek
SAT, Vienna, Austria

2:00 pm

Remote Operation Experiment towards Implementation of Remote Recycling

Akihiro Oikawa, Jun Oki, Kenta Torihara, Yuta Adowaki, Nozomu Mishima
Akita University, Japan

2:30 pm

Towards Smart E-Waste Demanufacturing Systems Exploiting Cyber-Physical Systems (CPSs) Capabilities

Nicoletta Picone¹, Marcello Colledani^{1,2}, Giacomo Copani¹, Marco Diani¹, Tullio Tolio^{1,2}
¹ITIA-CNR Institute of Industrial Technologies and Automation, Milan, Italy; ²Politecnico di Milano, Milan, Italy

D.6 Measuring and Improving the Recyclability (1/2)

1:30 pm

Improving Recyclability of Telecommunication Products

Lauri Smalen¹, Timo Galkin¹, Saija Vatanen², Timo Junno¹, Topi Volkov¹, Heikki Karvinen³, Mark Benowitz¹
¹Nokia, Bell Labs-CTO; ²VTT Technical Research Centre of Finland, Espoo, Finland; ³Aalto University, Espoo, Finland

2:00 pm

Recycling Vendor Audit Program in Compliance with EPEAT End of Life Management in Europe

Andreas Bohnhoff, Dora Caria
ERP SAS, Paris, France

2:30 pm

Eco-Design for Recycling: Developing Life Cycle Inventories on the End-of-Life of Electr(on)ic Products

Xavier Lantoinette¹, Laure Morice¹, Romain Lesage¹, Marianne Fleury², Pierre-Marie Assimon², Thomas Van Nieuwenhuysse²
¹RECYLUM, Paris, France; ²ECO-SYSTEMES, Courbevoie, France

E.6 Governance to Promote Eco-Innovative Products

1:30 pm

EU Revised Public Procurement Directive

Hans Wendschlag
Hewlett-Packard Inc., Stockholm, Sweden

2:00 pm

Public Procurement Barriers in Promoting Market Uptake of Innovative LED Lighting

Andrius Plepys, Jessika Luth Richter
IIIEE/ Lund University, Lund, Sweden



A.7 Applications: Photovoltaics

- 4:00 pm Photovoltaic Power Goes Green**
Nouha Gazbour¹, Carole Charbuillet², Christian Schaeffer¹, Guillaume Razongles¹
¹CEA-INES, French National Institute of Solar Energy, Chambéry, France; ²Institut Arts et Métiers de Chambéry, LCPI, Chambéry, France
- 4:30 pm Analysis of Photovoltaic Deployment Scenarios for Low-carbon Futures**
Yusuke Kishita
The University of Tokyo, Tokyo, Japan
- 5:00 pm Third Generation Photovoltaics: Early Intervention for a Circular Economy and a Sustainable Future**
Rhys Gareth Charles¹, Matthew Lloyd Davies², Peter Douglas^{3,4}
¹COATED Engineering Doctorate, Swansea University, UK; ²Materials Engineering, College of Engineering, Swansea University, UK; ³Chemistry Group, College of Medicine, Swansea University, UK; ⁴School of Chemistry and Physics, University of KwaZulu-Natal, South Africa.
- 5:30 pm A Possibility of Open Zero Energy Plant Factory**
Hiroshi Kubo¹, Shun Murayama¹, Masaki Tanimoto², Kazuki Okoso², Shizuo Maeno³
¹Chiba Institute of Technology, Chiba, Japan; ²Septenary Agriculture Inc., Chiba, Japan; ³mSe Corporation, Chiba, Japan

B.7 Recycling of Critical Metals – Hydrometallurgical Processes

- 4:00 pm Recovery of Critical Metals from Lamps and CRTs**
Valentina Innocenzi¹, Ida De Michelis¹, Bibiana Ferrari², Serena Sgarioto², Daniele Gotta², Bernd Kopacek³, Francesco Vegliò¹
¹Department of Industrial Engineering, of Information and Economy, University of L'Aquila, L'Aquila, Italy; ²RELIGHT S.R.L, Rho (Milan), Italy; ³ISL-Kopacek KG, Vienna, Austria
- 4:30 pm Recovery of Critical Metals from LCDs and Li-Ion Batteries**
Alessia Amato¹, Laura Rocchetti¹, Viviana Fonti¹, Thomas Abo Atia², Pietro Altimari², Emanuela Moscardini², Luigi Toro², Francesca Pagnanelli², Francesca Beolchini¹
¹Università politecnica delle Marche, Ancona, Italy; ²Sapienza Università di Roma, Rome Italy
- 5:00 pm Recovery of Base and Precious Metals from Waste Printed Circuit Boards and Spent Catalysts by Hydrometallurgical Processes**
Ionela Birloaga¹, Valentina Innocenzi¹, Ida De Michelis¹, Bernd Kopacek², Francesco Vegliò¹
¹Department of Industrial and Information Engineering and Economics, University of L'Aquila, L'Aquila, Italy; ²ISL-Kopacek KG, Vienna, Austria
- 5:30 pm Practical Experiences Operation Stationary and Mobile Hydrometallurgical Plants**
Serena Sgarioto¹, Bibiana Ferrari¹, Ida De Michelis², Bernd Kopacek³
¹RELIGHT S.R.L, Rho (Milan), Italy; ²ECORECYCLING S.R.L, Rome, Italy; ³SAT, Vienna, Austria

C.7 Workshop: Closing the Information Gaps

- 4:00 pm – 6:00 pm Recycler Information Center – A Tool for Initiating Paradigmatic Change in the EU's Treatment of E-Waste?**
Matthias Huisken¹, Markus Spitzbart², Thomas Opsomer¹, Elisabeth Herbeck²
¹iFixit GmbH, Stuttgart, Germany; ²Demontage- und Recycling-Zentrum D.R.Z., Vienna, Austria
- Information from Producers to Recyclers and Vice Versa: a Missing Link in the Circular Economy**
Jörg Westerfeld
EERA, Arnhem, Netherlands
- Moderated Discussion on How to Improve the Information Flows Between Producers and Recyclers**

Interactive
Session

D.7 Measuring and Improving the Recyclability (2/2)

- 4:00 pm Repair and Recycling Metrics – Applicability and Drawbacks of Current Methods**
Wayne Rifer¹, Lisa Dender², Max Marwede³, Mark Schaffer⁴
¹Green Electronics Council, United States of America; ²IBM, United States of America; ³Technical University of Berlin, Berlin, Germany; ⁴iNEMI, Pflugerville, United States of America
- 4:30 pm Would the Setting-up of Reference Values to Support the Calculation of Recyclability Rates Help Improving the Material Efficiency of Electronic Products?**
Perrine Chancerel¹, Max Marwede¹, Fabrice Mathieux², Laura Talens Peiro²
¹Technische Universität Berlin, Berlin, Germany; ²European Commission - Joint Research Centre, Ispra, Italy
- 5:00 pm REEECYC'LAB: Assessing and Improving the Recyclability of Electrical and Electronic Equipments**
Thomas Van Nieuwenhuysse, Pierre-Marie Assimon
Eco-systèmes, Courbevoie, France
- 5:30 pm Method to Assess Ease of Disassembly for Electrical and Electronic Equipment for Ecodesign and Treatment Cost Evaluation**
Paul Vanegas^{1,2}, Jef R. Peeters¹, Dirk Cattrysse¹, Paolo Tecchio³, Fulvio Ardente³, Fabrice Mathieux³, Wim Dewulf¹, Joost R. Duflo¹
¹KU Leuven, Department of Mechanical Engineering, Belgium; ²University of Cuenca, Centre for Environmental Studies, Ecuador; ³European Commission - Joint Research Centre, Institute for Environment and Sustainability

E.7 Social Responsibility

- 4:00 pm The Changing CSR: Evolving Language, Metrics and Mission**
Charles Michel Proian
Lexmark International EMEA, France
- 4:30 pm Assessing Corporate Sustainability in Taiwan on the Basis of UN Sustainable Development Goals**
Allen H. Hu, Lance HongWei Huang, Yen-ling Chang
National Taipei University of Technology, Taiwan, Republic of China
- 5:00 pm Arrow Value Recovery and Close the Gap partner to Close the Loop for Electronic**
Barbara Toorens¹, Isabelle Servant¹, Edwin Koolwijk², Carol Baroudi²
¹Close the Gap, Brussels, Belgium; ²Arrow Value Recovery
- 5:30 pm Social Life Cycle Assessment (SLCA) as an Effective Tool in Electronics Industry for Sustainable Development**
Winco K.C. Yung, Karpagam Subramanian
The Hong Kong Polytechnic University, Hong Kong, China

A.8 Measuring and Communicating Green ICT (1/2)

- 8:30 am** **Environmental Standards Development for Electronics: The Evolution and Future of EPEAT**
Pamela Brody-Heine
Green Electronics Council, Portland, United States of America
- 9:00 am** **The Evolution of IEEE 1680.1 – Environmental Assessment of Computers, Tablets and Displays**
Walter Jager
ECD Compliance, Stittsville, Canada
- 9:30 am** **UL 110 Sustainability for Mobile Phones, Description and Status**
William F. Hoffman III
UL Environment, Northbrook, United States of America

B.8 Metals for Soldering

- 8:30 am** **Options to Eliminate Lead From Die Attachments in Power Electronics**
Jürgen Wilde¹, Eike Möller¹, Adeel Bajwa²
¹University of Freiburg, Freiburg, Germany; ²University of California Los Angeles, Los Angeles, USA
- 9:00 am** **Thermodynamic and Theoretical-Based Modeling and Assessment of an Energy-Efficient Performance Measurement System in the Soldering Process**
Alireza Esfandyari, Sven Kreitlein, Elias Schmidt, Dominique Thomas, Joerg Franke
Institute for Factory Automation and Production Systems (FAPS), Friedrich-Alexander Universität Erlangen-Nürnberg, Nürnberg, Germany
- 9:30 am** **Recycling, Supply Chain Interventions, or Alternatives for Fair Soldering Tin?**
Cosima Stahr, Lukas Rüttinger, Astrid Lorenzen
adelphi, Berlin, Germany

C.8 Forecasting Volumes of WEEE

- 8:30 am** **Forecasting Waste Compositions: A Case Study on Solar Energy Systems**
Jef R. Peeters¹, Paul Vanegas^{1,2}, Wim Dewulf¹, Joost R. Dufflou¹
¹KU Leuven, Department of Mechanical Engineering, Leuven, Belgium; ²University of Cuenca, Centre for Environmental Studies, Cuenca, Ecuador
- 9:00 am** **Future Generation of WEEE in Developing Countries: An Estimation Model and Case Studies in Asia**
Masahiro Oguchi¹, Atsushi Terazono¹, Masaaki Fuse²
¹National Institute for Environmental Studies, Tsukuba, Japan; ²Hiroshima University, Hiroshima, Japan
- 9:30 am** **The US Electronics Recycling Landscape**
Jason Dean Linnell¹, Carole Mars², Christopher Nafe²
¹National Center for Electronics Recycling, Vienna, WV, United States of America; ²The Sustainability Consortium, Arizona State University, United States of America

D.8 Remanufacturing and Repair

- 8:30 am** **Developing a Repairability Indicator for Electronic Products**
Sebastiaan, FJ Flipsen^{1,2}, Conny, A. Bakker¹, Guus, LA van Bohemen¹
¹TU Delft, Delft, the Netherlands; ²iFixit Europe, Stuttgart, Germany
- 9:00 am** **Remanufacturing and Upcycling of an Industrial Robot Handheld Terminal Independently from the Original Equipment Manufacturer**
Rolf Steinhilper, Joachim Kleylein-Feuerstein
Fraunhofer IPA, Bayreuth, Germany
- 9:30 am** **Building the Circular Economy: A Case Study in Repair**
Kyle Wiens
iFixit, San Luis Obispo, United States of America

E.8 RoHS / Chemicals Restrictions

- 8:30 am** **Challenges and Difficulties Deriving from Extension of Annex II of the RoHS Directive**
Eva Susanne Hink, Nadiia Kaiun
1cc GmbH, Holzgerlingen, Germany
- 9:00 am** **Status of the RoHS Directive and Exemptions**
Otmar K. Deubzer¹, Nils F. Nissen¹, Yifaat Baron², Klaus-Dieter Lang³
¹Fraunhofer IZM, Berlin, Germany; ²Oeko-Institut e.V., Freiburg im Breisgau, Germany; ³Technische Universität Berlin, Berlin, Germany
- 9:30 am** **Lessons Learned from Medical Device Refurbishment in the Context of the RoHS Directive**
Yifaat Baron
Oeko-Institut e.V., Freiburg im Breisgau, Germany



A.9 Measuring and Communicating Green ICT (2/2)

- 10:30 am** **Energy Efficiency of ICT: Further Improvement Through Customized Products**
Lutz Stobbe¹, Marina Proske¹, Severin Beucker², Ralph Hintemann², Klaus Dieter Lang^{1,3}
¹Fraunhofer IZM, Berlin, Germany; ²Borderstep Institut, Berlin, Germany; ³Technische Universität Berlin, Berlin, Germany
- 11:00 am** **Strengthening Material Efficiency of Electrical and Electronic Equipment**
Ines Oehme¹, Kristine Sperlich¹, Regina Kohlmeyer¹, Siddharth Prakash², Knut Sander³, Christian Clemm⁴
¹German Environment Agency, Dessau-Roßlau, Germany; ²Oeko-Institute e.V., Berlin, Germany; ³Ökopol GmbH, Hamburg, Germany; ⁴Technical University Berlin, Berlin, Germany
- 11:30 am** **Best Environmental Management Practice for the Electrical and Electronic Equipment manufacturing sector**
Martin Möller¹, Ioannis Antonopoulos², Yifaat Baron¹, Paolo Canfora², Marco Dri², Pierre Gaudillat², Andreas R. Köhler¹, Andreas Manhart¹, Katja Moch¹, Siddharth Prakash¹, Rasmus Prieb¹
¹Oeko-Institut e.V., Freiburg, Germany; ²European Commission - Joint Research Centre, Spain
- 12:00 am** **Green Technology; Green Computing in a Sustainable Context**
Stephen Kaboggoza
Azam Media Uganda Limited, Sky Tower Technologies, Uganda

B.9 Conflict Minerals – Governance

- 10:30 am** **ISO Guidance Principles for the Sustainable Management of Secondary Metals**
Sonia Valdivia¹, Maria Sureda¹, Mathias Schluep¹, Rolf Widmer²
¹World Resources Forum, St. Gallen, Switzerland; ²Swiss Association for Standardisation, Winterthur, Switzerland
- 11:00 am** **Ethical Risks in the Supply Chain of Electronic Devices: Potentials and Limits of an EU Regulation on Conflict Minerals and Further Governance Approaches**
Johanna Sydow, Antonia Reichwein
Germanwatch, Berlin, Germany
- 11:30 am** **Due Diligence on 'Conflict' Minerals: A New European Regulation for a Changing Social, Political and Economic World**
Lena Partzsch
University of Freiburg, Freiburg, Germany
- 12:00 am** **Automating Conflict Mineral Business Processes, RCOI and Due Diligence**
Andreas Schifflleitner¹, Katie Boehme²
¹KERP Center of Excellence Electronic & Environment, Vienna, Austria; ²iPoint-systems, Reutlingen, Germany



C.9 The Two Worlds of WEEE Treatment (1/2)

- 10:30 am** **Bridging the Gap Between Informal & Formal E-waste Processors**
Deepali Sinha Khatriwal, Olivia Godeluck, Laura Burger, Deeksha Rao Sahib, David Rochat, Ulrike Voett
Sofies International SA, Mumbai, India
- 11:00 am** **Survey of Material Recovery by Informal E-waste Processing in the Philippines**
Atsushi Terazono¹, Masahiro Oguchi¹, Shunsuke Kuzuhara², Ruji P. Medina³, Florencio C. Jr. Ballesteros⁴
¹National Institute for Environmental Studies, Tsukuba, Japan; ²Sendai National College of Technology, Tsuruoka, Japan; ³Technological Institute of the Philippines, Manila, Philippines; ⁴University of the Philippines Diliman, Manila, Philippines
- 11:30 am** **E-waste Implementation Toolkit – EWIT**
Bernd Kopacek¹, Isabella Capurso²
¹SAT, Vienna, Austria; ²Remedia, Milano, Italy
- 12:00 pm** **Methodological Approach to Improving E-Waste Assessment in Emerging Economies**
Karima Hamouda, Vera Susanne Rotter, Nathalie Korf
Technische Universität Berlin, Berlin, Germany

D.9 Reuse Workshop part 1: Understanding and Improving the Framework

- 10:30 am** **Reuse of EEE: Limits to Growth?**
Roland Hischer, Heinz Böni
Empa, St. Gallen, Switzerland
- 11:00 am** **Product Or Waste? Criteria To Determine Re-usability**
Markus Spitzbart, Elisabeth Herbeck
Die Wiener Volkshochschulen GmbH, Vienna, Austria
- 11:30 am** **Extending Product Lifetimes Through WEEE Reuse and Repair: Opportunities and Challenges in the UK**
Christine Cole, Tim Cooper
Nottingham Trent University, Nottingham, United Kingdom
- 12:00 pm** **Reuse of (W)EEE in Germany – Product Flows and Environmental Impacts**
Henning Wilts¹, Nadja von Gries¹, Markus Meissner²
¹Wuppertal Institute, Wuppertal, Germany; ²Pulswerk, Vienna, Austria

Interactive
Session

E.9 Governance for WEEE Management

- 10:30 am** **Business Benefits of Authorised Representative Arrangements to Manage WEEE Compliance on Behalf of Importing Distributors**
Howard Stimpson
EC4P, Corsham, United Kingdom
- 11:00 am** **"Make the most of it." – Experiences from the Danish Voluntary Agreement on WEEE**
Christina Busk¹, Uffe Sønderhousen², Kristoffer Hvidsteen³, Annette Gydesen⁴, Mette Andersson²
¹The Confederation of Danish Industry; ²NIRAS A/S, Fredriksberg, Denmark; ³Accenture, Berlin, Germany; ⁴Viegand and Maagoe, København K, Denmark
- 11:30 am** **Li-Ion Batteries: a Nuisance or a Blessing in Disguise?**
Daniel Patrick Cronin
European Electronics Recyclers Association (EERA), the Netherlands
- 12:00 pm** **Projecting the Split Between Historic and Non-Historic WEEE in Ireland**
Michael Johnson¹, Colin Fitzpatrick¹, Jaco Huisman²
¹University of Limerick, Limerick, Ireland; ²United Nations University, Bonn, Germany

12:30 pm – 1:30 pm **LUNCH BREAK**

A.10 Green ICT Infrastructure

1:30 pm Energy Efficiency of Data Centers - A System-oriented Analysis of Current Development Trends

Ralph Hintemann¹, Severin Beucker¹, Jens Clausen¹, Lutz Stobbe², Marina Proseke², Nils F. Nissen²
¹Borderstep Institute, Berlin Germany; ²Fraunhofer IZM, Berlin, Germany

2:00 pm Concept for Telecom Network Production Sites Towards Sustainable and Energy-Efficient Operation

Christoph Lange¹, Norbert Casott², Dirk Kosiankowski¹, Michael Schlosser³, Ralph Schlenk⁴
¹Deutsche Telekom, Berlin, Germany; ²Deutsche Telekom, Berlin, Germany; ³Berlin Institute for Software Defined Networks GmbH, Berlin, Germany; ⁴Alcatel-Lucent, Nuremberg, Germany

2:30 pm Improved Sustainability in Wavelength-Division Multiplexing Network Elements

Klaus Grobe
 ADVA Optical Networking SE, Martinsried, Germany

3:00 pm Energy Efficient Ethernet in Practice

Sebastian Porombka
 University of Paderborn, Paderborn, Germany

B.10 Management of Critical and Conflict Minerals in Production

1:30 pm Supply Chain Transparency in the Electronics Industry

Christina Bocher¹, Susan Herbert²
¹DEKRA Assurance Services GmbH, Stuttgart, Germany; ²Green Electronics Council, Oregon, USA

2:00 pm On-line Supply Chain Sustainability Engagement

John Spear
 epi Consulting, London, United Kingdom

2:30 pm Material Flow Analysis of Gallium Arsenide in the German III/V-Semiconductor Industry

Christian Clemm¹, Nils Dethlefs¹, Frank Bugge², Nils F. Nissen³, Markus Weyers², Klaus-Dieter Lang^{1,3}
¹Technische Universität Berlin, Berlin, Germany; ²Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenz-technik, Berlin, Germany; ³Fraunhofer IZM, Berlin, Germany

3:00 pm When Agendas Align: Critical Materials and Green Electronics

Alexander H. King
 The Ames Laboratory, Ames, United States of America

C.10 The Two Worlds of WEEE Treatment (2/2)

1:30 pm Creating Viable Business from Electronic Waste Recycling

Ebipuado Sapre-obi, Ife Adewumi, Sulaiman Adekola
 Niger delta University, Yenagoa, Nigeria

2:00 pm The Brazilian Government Efforts to Support Electronic Recycling Facilities to Comply with Environmental Sound Practices

Arthur Braga Lima, Tiago Rocha, Marcos Pimentel
 Centro de Tecnologia da Informação Renato Archer (CTI), Campinas, Brazil

2:30 pm The Person-in-the-Port Project: Volume and Quality of Used Electronics Imports into Nigeria

Olusegun Odeyngbo¹, Otmar K. Deubzer¹, Rüdiger Kühr¹, Oladele Osibanjo², Innocent Chidi Nnorom², Percy Onianwa², Gilbert Adie², Stephanie Adrian³, Klaus Willke⁴
¹United Nations University, Shibuya, Tokyo; ²BCCC Africa, Nigeria; ³EPA, Washington D.C., USA; ⁴Senior Expert Service, Germany

3:00 pm Research – The Final Component to Improve e-Waste Recycling Industry in Ecuador

Ricardo Andres Montero Bermudez, Juan Carlos Escobar Moya
 Yachay Public Company, San Miguel de Urcuqui, Ecuador

D.10 Reuse Workshop part 2: Understanding and Improving the Products

1:30 pm Policies to Support Reuse and Remanufacturing of IT

Carl Johan Dalhammar, Leonidas Milios
 Lund University, Lund, Sweden

2:00 pm Repurposing of Notebook Computers: Demonstrating A Hybrid Reuse and Dismantling End of Life Strategy

Damian Coughlan¹, Colin Fitzpatrick¹, Muireann McMahon²
¹Department of Electronic & Computer Engineering, University of Limerick, Limerick, Ireland; ²Department of Design & Manufacturing Technology, University of Limerick, Limerick, Ireland

2:30 pm Challenges of Re-use and Re-manufacturing of Modern Chips in Smart Mobile Devices

Janusz Sitek, Marek Koscielski, Aneta Arazna, Wojciech Steplewski, Kamil Janeczek
 Tele and Radio Research Institute, Warsaw, Poland

3:00 pm Moderated Discussion on How to Encourage Good Reuse Practices

Interactive
Session

E.10 Looking into the Future

1:30 pm A Framework of Stock-based System Design and Management Toward a Steady-state Society

Hideki Kobayashi
 Osaka University, Osaka, Japan

2:00 pm Usage of Power Conservation System in Convenience Stores Toward 2030 CO2 Reduction Goal in Japan

Jun Fujimoto¹, Akio Suzuki²
¹Chiba Institute of Technology, Chiba, Japan; ²National Institute of Advanced Industrial Science and Technology (AIST), Japan

2:30 pm A Review of Green Electronics Research Trends

Nils F. Nissen¹, Lutz Stobbe¹, Hannes Zedel¹, Karsten Schischke¹, Klaus-Dieter Lang^{1,2}
¹Fraunhofer IZM, Berlin, Germany; ²Technische Universität Berlin, Berlin, Germany

3:45 pm – 4:45 pm Plenary 2: Closing Session



POSTER PRESENTATIONS

There is no template for posters, but the format for all posters should be A0, portrait style. Please don't use font sizes smaller than 18. Authors must bring their printed poster to the conference and arrive before midday on September 7, 2016. There will be assistance for hanging the posters with a clip system. At the conference poster authors are kindly requested to stay near their posters during the poster sessions in order to answer questions from other conference delegates and the poster session chair.

Poster Session time slots

Sept 7, 2016 | 3:30 - 4:30 pm
 Sept 8, 2016 | 3:00 - 4:00 pm
 Sept 9, 2016 | 12:30 - 1:30 pm

Poster Session

- 01 Lessons from Swedish Frontrunners: Towards a Framework for Sustainable Business Models for Second Life-cycles of ICT Products**
 Katherine A. Whalen, Julia L.K. Nußholz
Lund University, Lund, Sweden
- 02 Influencing Green Electronics Design in a Circular Economy**
 Erin Margaret Gately
Green Electronics Council, Portland, United States of America
- 03 Recycling Line for Neodymium-iron-boron (NIB) Magnets from Different Electronic Wastes**
 Claudio Fernández¹, Luis Martínez de Morentin¹, Alex Branderhorst², Gijs Schouten³, Andy Lobb⁴
¹Lurederra Research Centre, Spain; ²Coolrec BV, The Netherlands; ³Machinefabriek Otto Schouten B.V., The Netherlands; ⁴Magnet Sales & Service Limited, United Kingdom
- 04 Development of Critical Resource Demand in Wireless Sensing and Design Strategies for Reducing Material Consumption**
 Stephan Benecke¹, Nils F. Nissen¹, Klaus-Dieter Lang^{1,2}
¹Fraunhofer IZM, Berlin, Germany; ²Technische Universität Berlin, Berlin, Germany
- 05 On the Way to Future Recycling Routines for LED-Lamps: A Study of End-of-Life Lamps on the Design and the Materials Used**
 Andrea Gassmann¹, Fabian Brückner¹, Jörg Zimmermann¹, Roland Gauß¹, Rudolf Stauber¹, Oliver Gutfleisch^{1,2}
¹Fraunhofer Institute ISC, Project Group IWKS, Alzenau, Germany; ²Technische Universität Darmstadt, Materials Science, Darmstadt, Germany
- 06 The Non-recyclability of Critical Metals in WEEE: The Smartphones Case Study**
 Fanny Lambert, David Bastin
University of Liège, Liège, Belgium
- 07 Prospecting Secondary Raw Materials in the Urban Mine: Data Quality and Uncertainty of Product Compositions**
 Amund Nordli Loevik¹, Arthur Haarman¹, Arno Scheepens², Matthias Rösslein¹, Patrick Wäger¹, Jaco Huisman³
¹EMPA, St. Gallen, Switzerland; ²Delft University of Technology, Delft, the Netherlands; ³United Nations University, Bonn, Germany

- 08 Prospecting Secondary Raw Materials in the Urban Mine – The Case of Laptops and Tablets in Germany**
 Hina Habib¹, Jaco Huisman¹, Michelle Guzman Brechu¹, Cornelis Peter Balde^{1,2}, Susanne Rotter³, Paul Mählietz³, Perrine Chancerel³
¹United Nations University, Bonn, Germany; ²Statistics Netherlands, Den Haag, The Netherlands; ³Technische Universität Berlin, Berlin, Germany
- 09 Liquid Based Enrichment of Critical Metals from Separate WEEE Fractions**
 Martin Schlummer, Arthur Berrang, Fabian Trautmann, Andreas Mäurer
Fraunhofer IVV, Freising, Germany
- 10 Advanced Strategies to Study Bromine Contents on WEEE Plastics Through Online Detection Systems by Means of Spectroscopic Methods for Recycling Purposes**
 Mikel Barriuso¹, Asier Asueta¹, David Iribarnegaray¹, Sixto Arnaiz¹, Alex Branderhorst²
¹Gaiker, Spain; ²Coolrec, The Netherlands
- 11 Chemical Breakdown and Dismantling Data for E-Waste**
 Carsten Dietsche^{1,2}, Frank P. Mehlich^{3,4}
¹FernUniversität Hagen, Germany; ²Inter-Industrial Material Data Working Group, Germany; ³Giessen University, Institute for Anorganic and Analytical Chemistry, Germany; ⁴Chemie Consulting, Germany
- 12 Business Plan Calculation Tool for Manual Dismantling Facilities**
 Elisabeth Herbeck¹, Markus Spitzbart¹, Mathias Schlupe²
¹Die Wiener Volkshochschulen GmbH, Vienna, Austria; ²World Resources Forum, St. Gallen, Switzerland
- 13 Analysis of e-Waste Flows in the Electrical Electronic Equipment (EEE) Sector, Nigeria**
 Innocent Chidi Nnorom^{1,2}, Olusegun Ayodeji Odeyingbo³, Oladele Osibanjo²
¹Abia State University Uturu, Nigeria, Nigeria; ²BCCC Africa, Nigeria; ³United Nations University
- 14 Overcoming Challenges to Ensure Green Management of e-Waste in Nigeria**
 Innocent Chidi Nnorom^{1,2}, Olusegun Ayodeji Odeyingbo³
¹Abia State University Uturu, Nigeria, Nigeria; ²BCCC Africa, Nigeria; ³United Nations University
- 15 Characterization and Assessment of Management Alternatives for Rejects Generated in WEEE Sorting Process**
 Yovana M. B. Saavedra¹, Marco Castro², Valdir Schalch², Aldo R. Ometto¹
¹University of São Paulo, São Paulo School of Engineering/Department of Production Engineering, São Carlos, Brazil; ²University of São Paulo, São Paulo School of Engineering/Department of Hydraulics and Sanitation, São Carlos, Brazil
- 16 Challenges of Reverse Logistics Activities for Lithium-Ion Batteries**
 Moritz Neuffer, Lisa Gruber, Antonia Ottahal
TechProtect GmbH, Holzgerlingen, Germany
- 17 What Are the Environmental Benefits of Increasing the WEEE Treatment in France?**
 Rachel Horta Arduin¹, Carole Charbuillet², Françoise Berthoud³, Nicolas Perry⁴
¹IPT - Instituto de Pesquisas Tecnológicas do Estado de São Paulo, Brazil; ²Institut Arts et Métiers de Chambéry, Le Bourget du Lac, France; ³Université Grenoble Alpes, CNRS, Grenoble, France; ⁴Arts et Métiers - I2M, Talence, France
- 18 The Application of Bioleaching Technology in Recycling Metals from the Electronic Waste**
 Jianfeng Bai^{1,2}, Weihua Gu¹, Xuning Zhuang¹, Jin Zhao¹, Kaimin Shi², Chenglong Zhang¹, Jingwei Wang¹, En Ma¹
¹Shanghai Cooperative Center of WEEE Recycling, Shanghai Polytechnic University, People's Republic of China; ²The University of Hongkong, Hongkong
- 19 Application of Life Cycle Models in R&D of Electronic Products to Evaluate New Technology Developments**
 Matthias Harsch, Julian Christoph Maruschke
LCS Life Cycle Simulation GmbH, Backnang, Germany

- 20** **A Life Cycle Assessment of Waste Management: A Case Study of Used ICT Products Sold in the BoP Markets**
Sheng-Lung Lin, Jian-You Wu, Syuan-Liang Huang
Chaoyang University of Technology, Taiwan, Republic of China
- 21** **Integrated Evaluation of Functional and Visual Design towards Sustainability**
Tsubasa Naito, Tomoaki Kitajima, Nozomu Mishima
Akita University, Akita, Japan
- 22** **Sustainability Indicators for Information and Communication Technology Solutions and Services**
Minako Hara, Tomomi Nagao, Xiaoxi Zhang, Machiko Shinozuka, Shinsuke Hanno
NTT, Tokyo, Japan
- 23** **Promotion of High-voltage DC for Power Supply Systems in Telecommunication Buildings**
Atsushi Sakurai, Minako Hara, Takeshi Iwato, Yuriko Tanaka
NTT Nippon Telegraph and Telephone Corporation, Japan
- 24** **Eco-Design Trade-Offs for Wavelength-Division Multiplexing Network Elements**
Klaus Grobe
ADVA Optical Networking SE, Germany
- 25** **Environmental Performance of Reusing Small Electrical and Electronic Equipment: Case Study of Vacuum Cleaners**
María D. Bovea, Victoria Pérez-Belis, Valeria Ibáñez-Forés, Pilar Quemades-Beltrán
Universitat Jaume I, Castellón de la Plana, Spain
- 26** **New Technology to Improve the Efficiency of Photovoltaic Cells for Producing Energy**
Bertrand Laratte, Tatiana Perminova
University of Troyes, Troyes, France
- 27** **Evaluation of Simultaneous Consumption of Electrical Energy at Energy-Efficient Solar House**
Satoko Nasu, Yasuo Sugai
Chiba University Graduate School of Engineering, Chiba, Japan
- 28** **Carbon, Binder, and Solvent Free Anodes for Lithium Ion Batteries Using Silicon-based PECVD**
Fernando Gómez-Baquero, Bruce Toyama, Doug Grose
BESSTECH LLC, Albany, NY, United States of America
- 29** **Ecodriving: A Driving Style to Optimise the Use Phase of Our Vehicles**
Santiago González Ocón
Eco-efficient Design, Switzerland
- 30** **Case Studies of Innovative Eco-Design - Focusing on Development Background, Technical Features and Sustainable Points**
Youngdo Jung, Hyunjung Im
Korea Environmental Industry & Technology Institute (KEITI), Republic of South Korea
- 31** **PBW (Proton Beam Writer) application for EcoDesign of Electronics**
Hidetaka Hayashi^{1,2}, Hiroyuki Nishikawa¹
¹*Shibaura Institute of Technology, Tokyo, Japan;* ²*EcoDesign Promotion Network, Tokyo, Japan*
- 32** **Current Measures in Hazardous Substances Management for Products – an Overview and Critical Evaluation Regarding Effectiveness and Efficiency**
Ralph Schneider¹, Jürgen Henke¹, Stefan Dully²
¹*Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA, Stuttgart, Germany;* ²*DuPont International Operations Sàrl, Le Grand-Saconnex / Geneva, Switzerland*
- 33** **WEEE with Value: Experience, Opportunities, and Implications for Legislation**
Jessika Luth Richter, Naoko Tojo, Thomas Lindqvist
IIIEE/ Lund University, Lund, Sweden

- 34** **WEEE Legislation in Africa - Status and Current Developments**
Arne Campen, Eva Hink, Wolfram Kühn, Stefanie Enders
1cc GmbH, Holzgerlingen, Germany
- 35** **Understanding Waste Diversion Claims and UL2799 Zero Waste to Landfill Certification**
William F. Hoffman III
UL Environment, Northbrook, United States of America
- 36** **Registration and Reporting Duties of EEE in EU Member States**
Jens Becker
Bitkom Servicegesellschaft mbH, Berlin, Germany
- 37** **The Future of Environmental Product Compliance – Industrial Manufacturing Megatrends and Their Implications for Compliance Officers to Manage Compliance in the Next Decade**
Lutz-Guenther Scheidt¹, Kerri Doyle², Tedie West², Lucas Dann¹, Michael Betz¹
¹*thinkstep AG, Leinfelden-Echterdingen, Germany;* ²*Siemens PLM Software, USA*



GENERAL INFORMATION

Conference Fees

	EARLY BIRD until June 30	REGULAR past June 30
Regular	950 €	1.100 €
Speaker, Poster Presenter	695 €	–
Co-Chairs, Program Committee Members	550 €	550 €
Student	350 €	500 €
Participation in iNEMI Discussion Forum on Tuesday, September 6, 2016	50 €	50 €
Additional conference dinner for students or accompanying persons	75 €	80 €

The registration fee includes all lunches, daytime refreshments, evening events and WiFi access for regular participants, speakers, poster presenters, co-chairs and members of the program committee.

Student fees are only available for undergraduate and master students, they do not apply to PhD students. For students everything except the conference dinner is included, this can be booked separately.

All speakers and poster presenters are required to register by June 30, 2016 in order to secure their place in the conference.

Conference Venue & Accommodation

The EGG 2016+ Conference will be held at the Dahlem Cube Seminaris Hotel, close to the heart of the city. The conference center in the shape of a glass cube is a masterpiece of modern architecture by Helmut Jahn, Chicago. It is situated in the southwest of Berlin, in the district of Dahlem.

Rooms at preferential rates have been reserved for participants of the conference (100.00 EUR/ single room, 125.00 EUR/double room). September is a very busy time in Berlin, so reservations are highly recommended. Please download the ordering form (.pdf) from our website or mention the keyword "EGG 2016" when making your reservation over the phone.

Seminaris Campus Hotel Berlin
Takustraße 39
14195 Berlin

Phone: +49 30 557797-0
Fax: +49 30 557797-100

www.seminaris.de/hotels/seminaris-campus-hotel-berlin.html

For further hotel recommendations please consult our website.

Lunch and coffee breaks

Coffee breaks will be held in the poster and exhibition room on the ground floor. Lunch will be provided both there and in the restaurant of the Seminaris hotel.

Dietary requirements

The rich buffet lunch is designed to cater for all dietary requirements and all tastes. When in doubt, please consult one of the chefs serving the food, they will be able to give you detailed information.

Internet access

We will provide all conference delegates with wireless internet access. Log-in details will be available before the conference.

Conference language and proceedings

The official language of all presentations is English.



EVENING PROGRAM

WEDNESDAY, SEPTEMBER 8 / 7:00 – 11:00 PM

Gala Dinner at Wasserwerk

Join us for the Electronics Goes Green 2016 gala dinner at Wasserwerk. Built in 1906, Wasserwerk, which translates as water pump station, kept water flowing through Berlin's pipes throughout the 20th Century. The iconic red-brick building is very typical of turn-of-the-century Berlin and Brandenburg architecture and has now been transformed into a beautiful event location. Guests marvel most of all at the stunning, industrial-chic interior, which features the pumping station's original giant piston pumps.

The evening promises to be a lively highlight of the conference and an excellent opportunity for mingling and networking with conference delegates from all over the world. Discuss hot topics, controversial presentations or just shoot the breeze with experts from a wide range of disciplines to make the most of your conference participation.

Green Electronics Council (GEC) Catalyst Award

The Green Electronics Council (GEC) Catalyst Awards seek to inspire innovation in the design, manufacture and use of electronics to advance sustainability principles. By recognizing transformative yet scalable advances, GEC highlights innovative best practices throughout the supply chain that move society ever closer to a world in which only sustainable electronics are designed, manufactured, purchased and processed at the end of their useful life.

The nomination period has now closed, and a panel of third-party experts has begun judging the nominations. Finalists for the 2016 Catalyst Award will be announced this summer. Nominations were accepted worldwide from any organization, individual or combination thereof collaborating to achieve sustainability. Nominations were accepted for products, processes, policies and programs launched within the past five (5) years and that exist in the public domain at the time of submission.

The Catalyst Awards are managed by the Green Electronics Council, a mission-driven 501(c)(4) non-profit that seeks to achieve a world in which only sustainable electronics are designed, manufactured, bought, used and recycled. Founded initially to manage EPEAT, the definitive global rating system for greener electronics, GEC advocates for sustainable electronics by facilitating both manufacturers and large-scale purchasers to understand the challenges facing sustainable electronics; to commit to address those challenges; and to act and change internal operational, manufacturing and procurement behaviors. GEC collaborates with stakeholders of all types to facilitate the adoption of sustainable manufacturing and procurement behaviors.

Further information: <http://greenelectronicscouncil.org/sustainable-solutions/awards>



Wasserwerk-Berlin | Hohenzollerndamm 208a | 10717 Berlin

THURSDAY, SEPTEMBER 8

The night is yours – and no city has longer nights than Berlin!

Coming to a conference in Berlin is a great chance to get to know the city. On the Thursday evening, conference participants get to swap workshops and seminars for a refreshing dip into Berlin's cultural life. A concert, a boat trip, a museum visit or may be just an evening in one of Berlin's many parks, enjoying the sunset with the locals?

We'll have some suggestions on our website by early August, the rest will be up to you!



Organized by

Fraunhofer IZM and TU Berlin
c/o Fraunhofer IZM
Gustav-Meyer-Allee 25
13355 Berlin, Germany

Phone: +49. (0)30.46 40 3137
Fax: +49. (0)30.46403211
egg2016@izm.fraunhofer.de
www.electronicsgoesgreen.org

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