



65th LCA Discussion Forum

How suitable is LCA for Nanotechnology assessment? Overview of current methodological pitfalls and potential solutions

Wednesday, 24 May 2017, ETH Zürich, Alumni Pavilion

We cordially invite you to the 65th Discussion Forum on Life Cycle Assessment
The official language of this event is English

Ten years ago, participants to an international workshop in Washington D.C. on “Nanotechnology and Life Cycle Assessment” concluded that, *a priori*, the LCA ISO framework is fully suitable for the assessment of nanomaterials and nano-products, despite notable shortcomings in the availability of inventory data and missing evaluation instruments for impact assessment. Since then, various actors have worked extensively on these aspects with the goal of ensuring that traditional and nano-specific environmental issues can be assessed within a unified, comprehensive and consistent framework.

This discussion forum will provide an overview of the key challenges that face practitioners and data providers when undertaking LCA of nanotechnology and will present possible solutions. The opening session will outline the need for environmental assessment of nanotechnologies in light of growing interest in nanomaterials for consumer and industrial applications and prevailing concern for the potential environmental impacts of nanoparticle emissions. The possible role of LCA in guiding environmentally-responsible innovation for emerging nanotechnologies will then be discussed. The second session will focus on prospective modelling of nanotechnologies and will consider how uncertainty should be dealt with in LCA of emerging technologies. A key question to be addressed is whether or not lab-scale data can or should be used as a basis to assess the potential impacts of intended future plant-scale production and, if so, what methods could be applied. Case studies will be presented to provide insights into how these issues have been dealt with in reality. The third session will outline why and how existing LCIA models must be modified (in terms of fate, exposure, and toxicity modelling) to enable more representative evaluation of the potential impacts of nanoparticle/nanomaterial emissions. In the fourth and final session, the potential added values of combining LCA with risk assessment (RA) approaches will be discussed, highlighting the potential for enhancing our knowledge of how nanotechnologies affect the environment, human health, and society.

This forum aims to provide a fertile ground for discussion between LCA researchers, practitioners and other people interested in the sustainable development of nanotechnologies.

We look forward to meeting you in Zürich,
the «Advancing Life Cycle Assessment» (ALCA) Group at Empa

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Programme DF 65 «LCA for Nanotechnology»

| Time | Title | Speaker [Moderator] |
|-------|---|---|
| 8:30 | Registration, coffee & croissants | |
| | Perspectives on environmental assessment of nanotechnology | [Arthur Haarman, Empa] |
| 9:00 | Welcome and Introduction: State-of-art and challenges when applying LCA to nanotechnology | Roland Hischier, Empa, St. Gallen (CH) |
| 9:25 | Regulation of Nanomaterials – the relevance of LCA and RA | Tobias Walser, Vereala, Zürich (CH) |
| 9:50 | Industrial perspective on nanotechnology development | Karl Hoehener, TEMAS (CH) |
| 10:15 | Discussion | |
| 10:30 | Coffee break | |
| | Prospective modelling for nanotechnology | [Didier Beloin-Saint-Pierre, Empa] |
| 11:00 | Exploring prospective application of LCA to enhance Technological Development | Marco Villares, Delft (NL) |
| 11:25 | Prospective LCA modelling: How to deal with uncertainties? | Isabelle Blanc, MINES ParisTech, Nice (F) + Didier Beloin-Saint-Pierre, Empa (CH) |
| 11:50 | Discussion | |
| | Short presentations | |
| 12:15 | A comparison of two methods for probabilistic modelling of ENM emissions along their life cycle | Véronique Adam, Empa, St. Gallen (CH) |
| 12:25 | Decision-making concept on medical nanoparticles | Peter Weyell, University of Jena (D) |
| 12:35 | A network perspective reveals decreasing material diversity in studies on nanoparticle interactions with dissolved organic matter | Nicole Sani-Kast, ETH, Zürich (CH) |
| 12:45 | Lunch | |
| | Impact assessment methods for nanotechnology | [Beatrice Salieri, Empa] |
| 13:45 | Toxic effects from nanoparticles: limits and gaps in the assessment | Savvina Chortarea, Empa, St. Gallen (CH) |
| 14:10 | Modelling of releases of nanoparticles into the environment | Fadri Gottschalk, ETSS, Scuol (CH) |
| 14:35 | Integrating fate and toxicity of engineered nanoparticles into LCIA | Olivier Jolliet, University of Michigan (USA) |
| 14:50 | Discussion | |
| 15:15 | Coffee break | |
| | Combining LCA and risk assessment (RA) for nanotechnology | [David Turner, Empa] |
| 15:45 | GUIDEnano: A tool for risk assessment of nano-enabled products considering the whole life cycle | Socorro Vázquez-Campos, LEITAT, Barcelona (E) |
| 16:10 | LCA and RA for nanotechnologies: complementarities and challenges | Elorri Igos, LIST, Luxembourg (L) |
| 16:35 | Discussion | |
| | Wrap up and announcements | |
| 17:00 | Wrap up and announcements | Roland Hischier, Empa (CH) |
| 17:15 | Farewell | |

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Practical information

Registration

To register for the whole year or a single LCA Discussion Forum, please use the following link:

<https://www.converia.ethz.ch/frontend/index.php?sub=33>

To register you need to create a profile, which is done in very few steps and is self-explanatory. In case you are not able to pay by credit card, please send an e-mail to: lcaforum@ethz.ch with a short notice that you want to receive an invoice instead. Please provide the full invoice address as well as the chosen fee type.

For all questions regarding the registration process, please do not hesitate to contact: www.lcaforum.ch

Programme updates will be available at: www.lcaforum.ch

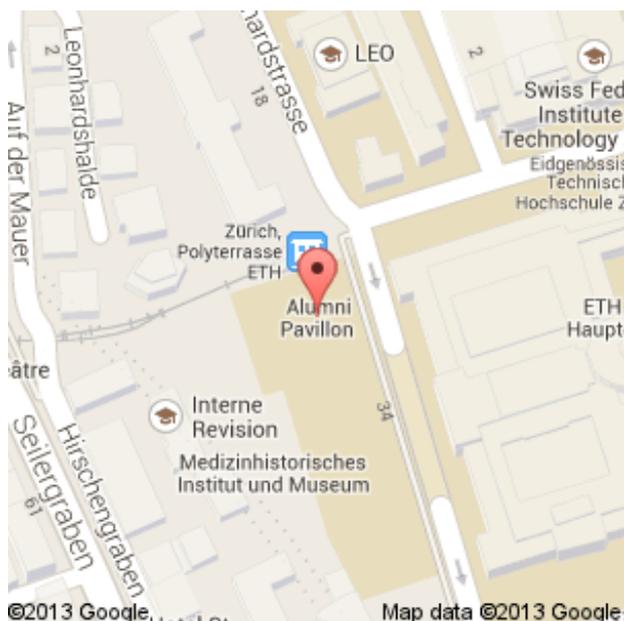
Lunch

Vouchers for lunch at the ETH restaurant will be provided to all participants. A vegetarian meal option is always on offer.

Location

The DF will take place in the Alumni (GEP) Pavillon, Swiss Federal Institute of Technology Zurich, 8001 Zurich.

<https://maps.google.ch/maps/ms?msa=0&msid=205813047619347088253.0004e0af154b1fc2c1968&ie=UTF8&ll=47.376616,8.546441&spn=0.00287,0.006968&t=m&z=18&vpsrc=6&iwloc=0004e0af154df9d0190e4>



For further information, please contact Barbara Dold: lcaforum@ethz.ch