

## Editorial

Papers from the Society & Materials conference, SAM-9, held in Luxembourg, 11 & 12 May, 2015

This is the 10<sup>th</sup> anniversary of the Society and Materials series of conferences, or SAM, launched in 2004, at a time when it was felt that the 7<sup>th</sup> European Research Framework Program was mature enough to support and foster interdisciplinary programs emerging from the grassroots communities in need of original and new results.

However, the program, which we were proposing at the time under the name of SOVAMAT (SOcial VAue of MATerials), did not lead to any call for proposals not to any project financially supported by the Commission. Research officials had their own vision of what should become of Life Cycle Analysis (LCA) and framed research calls according to their own priorities. Ten years later, the projects that were selected at the time have not really redefined and reshaped the domain but the Commission has carried out its perceived duty of financing research and letting it move forward, on the premise that it would lead to GDP growth.

The SOVAMAT Community self-organized in a different way: it gave up looking for subsidies in the Framework Programs and focused on the roadmap that it had defined on its own. The Community organized annual conferences, called SAM, on a series of pluri- and interdisciplinary themes, where speakers present their methodological advances and compare their approaches, most of which are experimental and pragmatic. They come from various communities, some organized around methodological tools, like LCA, MFA or SAT and their evolution, but also engineering sciences, natural sciences, soft sciences, sometimes called subtle sciences, or human sciences. Their interest is both focused on methods and on emergent and open issues that the tools should help tackle.

The outcome has reached far beyond our initial intuitions and expectations, as we have now reached all the targets of the initial roadmap. It should be acknowledged that the research effort has been an order of magnitude larger than what was imagined *ab initio* for the never-born FP project [1]. How issues are raised now has changed with time and the initial, somewhat bureaucratic vision of a single and universal methodology has changed into a more impressionistic approach, where successive brush strokes create a holistic painting, full of lightness and subtlety. The SAM seminars and conferences take place in a different location in Europe each year and attract about 100 *aficionados* coming from the whole world: the next conference, SAM-10, will thus take place in Rome on 9 and 10 May 2016. There is much to say in favor of research progressing bottom up, apart from the constraints of strict top-down programs and letting players and creators from the community follow their curiosity, with the focus and determination that are its drivers.

I would also like to thank EDP Science and its editors, who opened up their pages to this adventure [2–5], which is definitely different from the traditional way of doing metallurgy or materials science. To accept playing the game of pluridisciplinarity, especially when it is as open as in the SOVAMAT agenda, calls for courage and vision from a scientific publishing organization and this is paid, sometimes, by a delay in the international recognition of a journal in impact factor and citation metrics. When will indicators be invented that measure the interdisciplinarity of a paper that does not operate in a silo? At a time when drones hover to look at the physical world from above, scientific and technical publications should also take off to "reach for the sky" above disciplinary boundaries and encourage researchers who are not afraid of heights!

Jean-Pierre Birat

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## References

- [1] J.-P. Birat, A. Declich, S. Belboom, G. Fick, J.-S. Thomas, M. Chiappini, *Metall. Res. Technol.* **112** (2015) 501
- [2] J.-P. Birat, *Revue de Métallurgie* **109** (2012) 271-272
- [3] J.-P. Birat, *Revue de Métallurgie* **110** (2013) 1
- [4] J.-P. Birat, *Metall. Res. Technol.* **111** (2014) 129-130
- [5] J.-P. Birat, *Matériaux & Techniques* **102** (2014) 501

Program of the 9<sup>th</sup> conference on Society and Materials (SAM-9),  
Luxembourg, 11–12 May 2015

**Introduction by Jean-Pierre Birat, ESTEP**

Welcome address by Paul Schosseler, LIST, host of the conference

**Session 1: The Circular Economy**

**The limits of sustainable metal resource availability, keynote lecture by Eric Pirard, University of Liège**

Development of a circular economy approach for construction materials in Luxembourg, *Alina Belousova, LIST*  
A review of methodologies to assess the value of waste management & the circular economy: a case study of Flanders (Belgium), *Maarten Dubois, KU Leuven*  
Closing the loop for aluminium cans, *Monia Niero, DTU*

**Session 2: LCA applications and new developments**

**The Social Value of Materials, keynote lecture by Julian Allwood, University of Cambridge**

Global algorithms for LCA-based multi-goal constrained optimization of potable water plants, *Florin Capitanescu, LIST*

Approach to put local environmental impacts in context to local added value - the example of ship scrapping within the lifecycle, *Nathanael Ko, University of Stuttgart*

Ready-to-use and advanced methodologies to prioritise the regionalisation effort in LCA, *Laure Patouillard, CIRAIG*

**Integration of Life Cycle Assessment in the conceptual design of renewable energy conversion systems, keynote lecture by François Maréchal, EPFL**

Characterization of urban building stocks in a life cycle assessment framework: a case study in Luxembourg, *Alessio Mastrucci, LIST*

A simplified tool to evaluate the sustainability of buildings in steel in early stages of design, *Paulo Santos, University of Coimbra*

Reducing burdens in LCA : Overriding Life Cycle Assessment in Small-Medium Enterprises for the Wood Product Industry, *Heather M. Davidson, FCBA*

Comparing upcycling vs downcycling for construction & demolition waste: the case of concrete aggregate, *Andrea Di Maria, KU Leuven*

**Session 3a: Material Flow Analysis & Critical Raw Materials**

Narratives and materials, *Jean-Pierre Birat, ESTEP, Andrea Declich, Laboratory of Citizenship Sciences*  
Material System Analysis of Critical Raw Materials in Europe, *Charlotte Petiot, BIO Intelligence Service*  
Conceptual Evaluation Model and Methodology for criticality of materials in a Product and Industrial Level, *Yanya Jin, UT Troyes*

**Session 3b: Material Flow Analysis & Critical Raw Materials**

**Social innovation: a new paradigm for sustainable material development?, Keynote lecture by Antonius Schröder, University of Dortmund**

Critical aspects of the application of material flow analysis on plant level, *Verena Trinkel, TU Wien*  
Elaborating the history of our cementing societies: an in-use stock perspective, *Gang Liu, University of Southern Denmark*

The recycling rate of steel, *Philippe Russo, ArcelorMittal*

Dynamic MFA of steel in Europe, *Daryna Panasiuk, IRT*

## Session 4: LCA and biomass

From trees to electricity, the physics beyond LCA, *Olivier Mirgaux, University of Lorraine*

Implementing industrial ecology: what the bio-based construction materials case can teach us?, *Jérémie Joubert UT Troyes*

Variability of the environmental impacts of raw cork, *Dias, A. C., University of Aveiro*

Life cycle assessment of wood construction products fabricated in the Walloon region (Belgium) - comparison of process and input-output LCA, *Zeller, V.R., Université Libre Bruxelles*

## Session 5: Societal, economics and sustainability issues

### Resource conservation and material recycling, keynote lecture by Ichiro Daigo, University of Tokyo

Overview of concrete experiences and exchange of best practices in the field of sustainability assessment, *Isabelle Chaput, RDC Environnement,*

Society and materials in the European policies for responsible research and innovation, *Andrea Declich, Laboratory of Citizenship Sciences*

The social value of a steel product: the launch of an action-research based on the theory of value in economics, *Mélodie Caraty, Arcelor Mittal*

Property-based structural value of steel, *Daisuke Matsui, University of Tokyo*

Monitoring the environmental and energy impacts of electric arc furnace steelmaking, *Valentina Colla, Scuola Superiore Sant'Anna*

Key sustainability performance indicators selection for the recycling carbon fibers sector, *Baptiste Pillain, University of Bordeaux*

## SAM 9 Conclusions, Jean-Pierre Birat, ESTEP

### Posters

Life Cycle Assessment and functional unit to assess product's refurbishing and reuse within multiple scenarios as second applications use, *J.L. Amaya, Escuela Superior Politecnica del Littoral*

Testing and developing LCA tools and methodologies in a multi-industrial and -academic project, *Gael Fick, IRT*

Towards a midpoint indicator for including noise impacts from mobility in LCA, *Rodolphe Meyer, LIST*

Integrating agent-based models in life cycle assessment: a case study in Luxembourg, *Tomás Navarrete Gutiérrez, LIST*

Improving the life cycle impact assessment of ecosystem services through the use of an integrated model, *Benoit Othoniel, LIST*

Environmental impact assessment of rail freight intermodality, *Angel L. Merchan, University of Liège*

Taking into account the dynamics of electricity demand and supply of a school, *Emil Popovici, LIST*

Electrical and electronic equipment environmental product declarations: towards a harmonized system?, *Axel Roy, Bureau Veritas*

Resource optimized product design from a holistic lifecycle perspective, *Roberta Graf, Fraunhofer IBP*

LCA education: overview about the Belgian situation, *Angélique Léonard, University of Liège*

Life cycle assessment of anthropic water, *Sylvie Gros Lambert, University of Liège*

Prognostic evaluation of environmental and energy impacts in electric arc furnace steelmaking through process modelling and simulation, *Ismael Matino, Scuola Superiore Sant'Anna*

Life cycle assessment of four municipal solid waste management scenarios in Irkutsk, Russia, *Olga Ulanova, National Research Irkutsk State Technical University*