



SaferNanoDesign Summer School

1st Edition, Archamps, June 13-18 2016

Sylvia Lehmann (UGA, Fr)

Aix-en-Provence, July 11, 2016

Six-day intensive Program

Safer Design for Nanomaterials: Enabling development of sustainable, profitable, functional and environment/Human friendly Nanomaterials

Summer School 2016 – June 13th - 18th, ESI Archamps						
	Monday 13th	Tuesday 14th	Wednesday 15th	Thursday 16th	Friday 17th	Saturday 18th
8:45 - 8:50	B. Holland M. Gauthier (ESI, FR): ESI presentation					
8:50 - 9:00		M. Auffan Introduction (I)	B. Gilbert Introduction (II)	S. Lehmann (III) Introduction		
9:00 - 9:30	S. Lehmann (UGA, FR): Content, Overview and Training objective of the school.	M. Auffan (CEREGE, FR) Nanotechnology and NM intrinsic properties	B. Gilbert (Berkeley, US) Surface chemical processes of nanomaterials in environment	S. Lehmann (UGA, FR) Nanotoxicology introduction	Practical session (IV) C. Auplat Follow up on Business case study and Q&A session	Oral Defense
9:30 - 9:45	C. Auplat (Novancia Business School, FR) Business Case study: Nanomaterials: New opportunities for SMEs?					
9:45 - 10:30						
10:30 - 11:00	Break	Break	Break	Break	Break	Break
11:00 - 11:45	Group organization and project selection	J. Rose (CEREGE, FR) Ecoconception, Safer by design	R. Behra (EAWAG, CH) Ecotoxicity of nanoparticles to unicellular algae and fish cells	F. Ehrhart (Maastricht University, NL) Gene expression data analysis	H. Aladjov (OECD, FR) Introduction to AOPs and how they can be captured in Effectopedia.	Round Table
11:45 - 12:30		T. Quaranta (LHYGES, FR) LCA: a tool to assess environmental impact of nanotechnologies?	A. Tiili (EAWAG, CH) Toxicity of nanoparticles to complex microbial communities in fresh waters	F. Ehrhart (Maastricht University, NL) Biologic networks and Pathway analysis		
12:30 - 14:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
14:00 - 16:00	Practical session (IV) C. Auplat; S Ben Slimane Business Case Study: The Ampaint case.	Practical session (I). T. Quaranta: How to run a nano TiO2 production and a touch screen LCA (Two case studies)	Practical session (II); B. Gilbert; L. Charlet; A. Tiili Nanoparticles aggregation, dissolution and transformation. Silver nanoparticles toxicity on algae	Practical session (III) F. Ehrhart Gene expression data analysis WP3 P1	Practical session (III) H. Aladjov Effectopedia	End of the School
16:00 - 16:15						
16:15 - 17h00	O. Loget (CapEval Pharma, FR) The industrial point of view on toxicity testing	Practical session (I). C. Levard Tomography practical	Practical session (II); B. Gilbert; L. Charlet; A. Tiili Nanoparticles aggregation, dissolution and transformation. Silver nanoparticles toxicity on algae	Practical session (III) F. Ehrhart Pathway and gene ontology analysis	L. Charlet (ISTerre, FR) Overview lecture: The history of asbestos in the developed and developing worlds	   
17:00 - 17:45	L. Tran (IOM, UK) Overview lecture: Framing Atherosclerosis and Alzheimer Disease as a Nanotoxicology Problem				Work in groups	
17:45 - 18:15	Work in groups					
18:15 - 19:30	Barbecue	Break	Break	Break	Break	
19:30 - 20:30		Dinner	Dinner	Dinner	Dinner	
20:30 - 22:00	Work in groups	Work in groups	Work in groups	Work in groups	Work in groups	

School Content

Technology
transfer and
Business
development

Nano specific
properties
enabling new
technology

NM Ecodesign

LCA

NM behaviour and
environmental
transformation

Exposure

Ecotoxicity

Human Toxicity

Nanotoxicology
assessment :
present and future

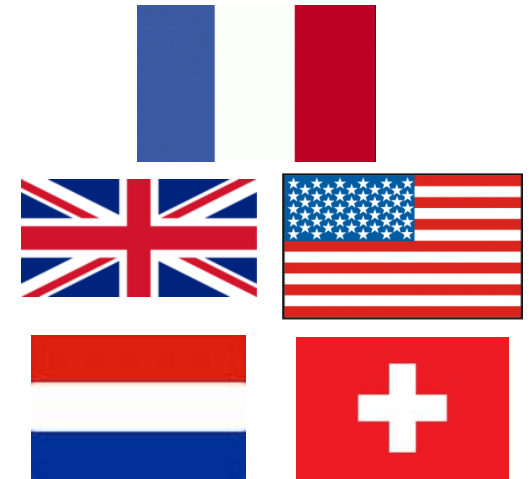
Perspective and Overview lectures

Morning : Lectures / Afternoon : Practical sessions

Work in groups on a business project for the development of an innovative nanotechnology product

17 Speakers

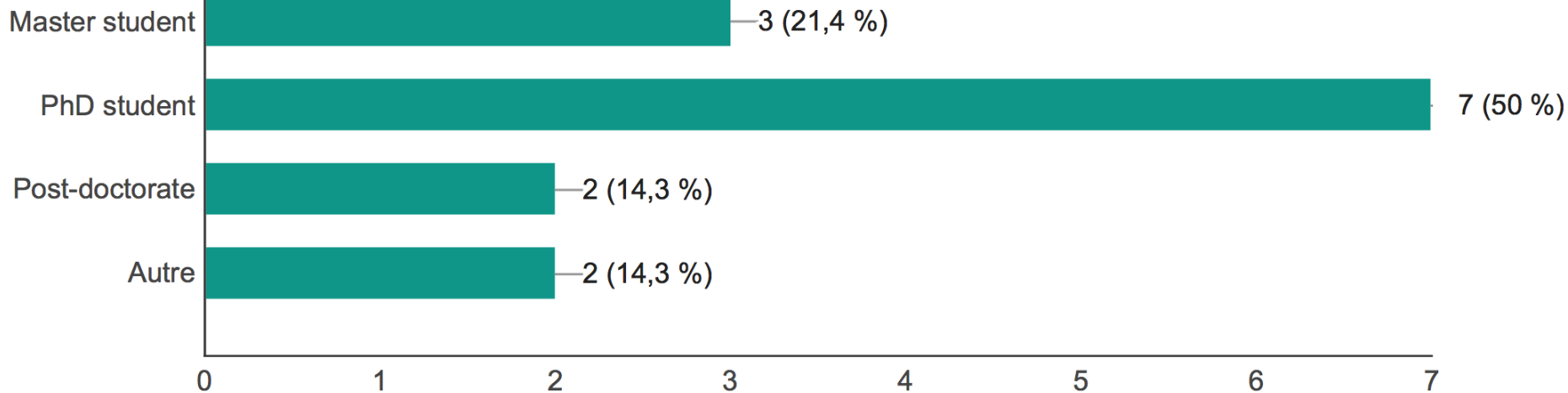
Hirsto Aladjov, OECD, FR
Bala Annangi, INSERM, FR
Mélanie Auffan, CEREGE, FR
Claire Auplat, Novancia Business School, FR
Renata Behra, EAWAG, CH
Sonia Ben Slimane, Novancia Business School, FR
Daniel Bernard, CEA, FR
Laurent Charlet, UGA, FR
Friederike Ehrhart, Maastricht University, NL
Benjamin Gilbert, Berkeley, US
Sylvia Lehmann, UGA, FR
Clément Levard, CEREGE, FR
Olivier Loget, CapEval Pharma, FR
Tania Quaranta, LHYGES, FR
Jérôme Rose, CEREGE, FR
Ahmed Tlili, EAWAG, CH
Lang Tran, IOM, UK



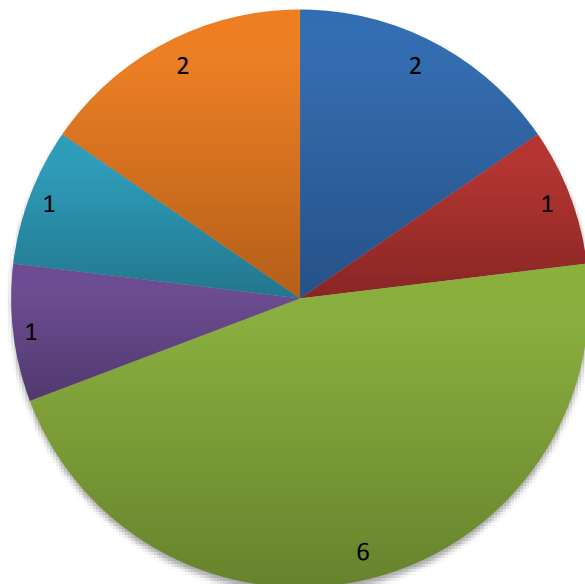
From academic, industry
and regulatory bodies

13 Students

Current Position



Current University



- Italy
- Belgique
- France
- Switzerland
- Croatia
- Portugal

Background

- Biology,
- Chemistry
- Economy
- Medecine

Practical examples

Wet lab experiment

Toxicity of silver nanoparticles to green alga (*Chlamydomonas reinhardtii*)

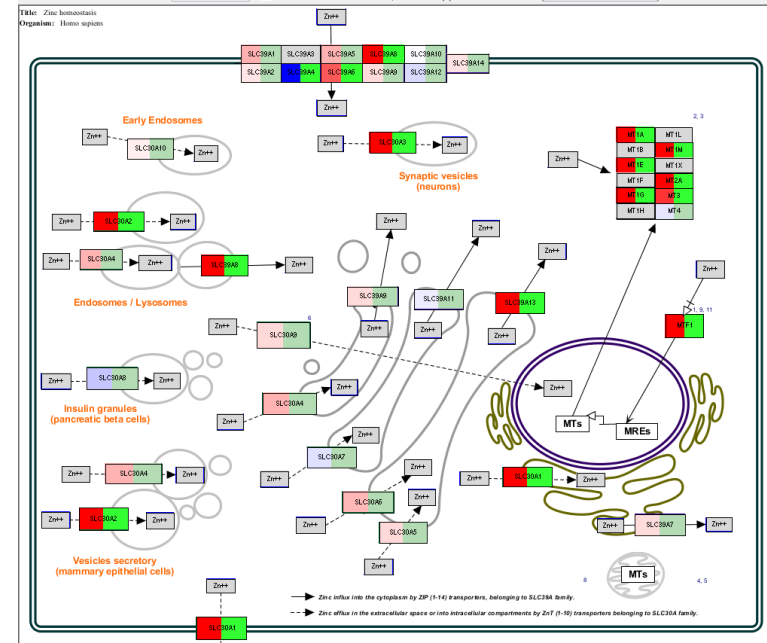
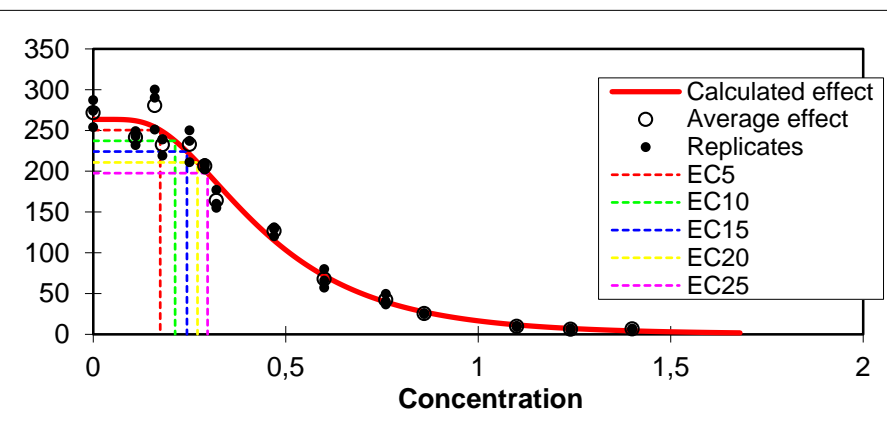


Pathway of toxicity analysis



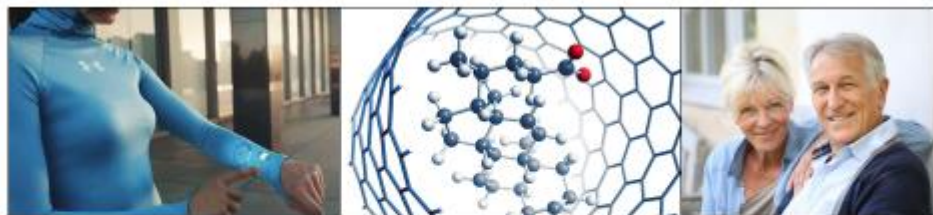
Upload and analysis of omics data with open-source software

Photosynthetic yield measurement and analysis: dose-response curve



Students Group Business project

Business project for the development of an innovative nanotechnology product



SmarTex™

the Solution for Active Aging

Arianna Oddo, Joint Research Centre, European Commission (Italy)

Kutub Ashraf, University of Grenoble Alpes (France)

Mariia Ostapchuk, Paris Dauphine University (France)

Md. Mehadi Hasan Sohag, University of Grenoble Alpes (France)

- Taking into account the environmental and health impact of the product all along its life cycle
- Using the safer by design approach
- Performing SWOT and risk/benefits analysis to demonstrate the viability of the business project

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European Scientific Institute, Archamps

NANOCOMPOSITE STRUCTURE WITH INTEGRATED ELECTRONICS FOR AEROSPACE APPLICATIONS

BY

NADIA VON MOOS
JÉRÔME LAISNEY
ANDREA PRODI



S.A.F.E

Software
Analysis for
Fate
Evaluation

Fernanda Rosário
Silvia Palombella
Fátima Brandão

Budget and Organization

Funding :

- SERENADE
- COST MODENA
- BioHealth Computing Erasmus Mondus program

Organization management :

- Bob Holland, Marie Gauthier, Filiz Demolis and Marjorie Romand, ESI, Archamps
- Philippe Sabatier and Sylvia Lehmann, UGA

Successful 1st edition!



Up to 30 students

Funding opportunity?

Master 2 students from UGA and other universities?

Acknowledgment

Students

Dalel Askri, Fátima Brandao, Zeljko JAKSIC, Jerome LAISNEY, Arianna ODDO, Mariia OSTAPCHUK, Silvia PALOMBELLA, Andrea PRODI, Fernanda ROSARIO, Nadia VON MOOS, Kutub ASHRAF, Arindam DEY, Md. Mehadi Hasan SOHAG

Speakers

Hirsto Aladjov, Bala Annangi, Mélanie Auffan, Claire Auplat, Renata Behra, Sonia Ben Slimane, Daniel Bernard, Laurent Charlet, Friederike Ehrhart, Benjamin Gilbert, Sylvia Lehmann, Clément Levard, Olivier Loget, Tania Quaranta, Jérôme Rose, Ahmed Tlili, Lang Tran.

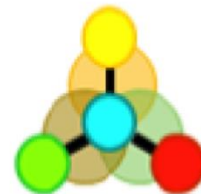
Organization

Philippe Sabatier, Bob Holland, Marie Gauthier, Filiz Demolis and Marjorie Romand

SEM and Zetasizer



Funding



Serenade