Nanosafe 2012: International Conferences on Safe Production and Use of Nanomaterials

Grenoble, France
13-15 November 2012
# TABLE OF CONTENTS

## EXPOSURE ASSESSMENT

012001 Observation of Nanoaerosol Release from a Hand Dryer ................................................................. 1  
  G N Bae, S H Park, S B Lee

012002 A Modular Tool for Analyzing Cascade Impactors Data to Improve Exposure Assessment to Airborne Nanomaterials ............................................................. 5  
  S Bau, O Witschger

012003 Exploratory Study on a Statistical Method to Analyse Time Resolved Data Obtained During Nanomaterial Exposure Measurements .............................................................. 15  
  F Clerc, G-H Njiki-Menga, O Witschger

012004 Approach to the Exposure Assessment of MWCNT by Considering Size Distribution and Oxidation Temperature of Elemental Carbon ......................................................... 24  
  M Ono-Ogasawara, M Takaya, H Kabota, Y Shinohara, S Kodu, E Akiba, S Tsuruoka, T Miyao

012005 Urban Air Pollution by Nanoparticles in Ostrava Region ............................................................... 31  
  K Zdenka, M Vladimír, L Karel, D Pavel

## DETECTION AND IDENTIFICATION

012006 Detection and Identification: Instrumentation and Calibration for Air/Liquid/Surface-borne Nanoscale Particles ........................................................................................................ 41  
  T Y Ling, Z Zuo, D Y H Pui

012007 Metal Impurities Provide Useful Tracers for Identifying Exposures to Airborne Single-wall Carbon Nanotubes Released from Work-related Processes ............................................. 53  
  P E Basmussen, J Jayawadene, H D Gardner, M Chénier, C Levesque, J Niu

012008 Risk Assessment of Released Cellulose Nanocrystals – Mimicking Inhalatory Exposure ................................. 61  
  C Endes, S Müller, O Schmid, D Vanhecke, E J Foster, A Petri-Fink, B Rothen-Rutishauser, C Weid, M D Clij

012009 Stability of Polymer Encapsulated Quantum Dots in Cell Culture Media ............................................................... 71  
  I Ojea-Jiménez, J Pielia, T-L Nguyen, A Bestetti, A D Ryan, V Puntes

012010 The Use of PIXE for Engineered Nanomaterials Quantification in Complex Matrices ...................................................... 76  
  O Lozano, O Toussaint, J-M Dogné, S Lucas

012011 µTAS (Micro Total Analysis Systems) for the High-throughput Measurement of Nanomaterial Solubility ........................................................................................................ 84  
  R Tantra, J Jarman

012012 Characterization of Manufactured TiO₂ Nanoparticles .............................................................................. 94  
  C Motzkus, T Macé, S Vaslin-Reimann, P Ausset, M Maillé

## TOXICOLOGY

012013 How Does the Deposited Dose of Oxide Nanomaterials Evolve in an in Vitro Assay? ................................. 104  
  O Lozano, J Mejia, J-P Piret, C Saout, J-M Dogné, O Toussaint, S Lucas

012014 Interaction of Fibrinogen and Albumin with Titanium Dioxide Nanoparticles of Different Crystalline Phases ........................................................................................................ 114  
  A Marucco, I Fenoglio, F Turci, B Fuhini

012015 Surface Ligand Dependent Toxicity of Zinc Oxide Nanoparticles in HepG2 Cell Model ................................. 124  
  D Bartczak, M-O Baradez, S Goenaga-Infante, D Marshall

012016 Biocompatibility and Cytotoxicity Study of Nanophotonic Rigid Gas Permeable Contact Lens Material ................................................................................................................. 131  
  A Murat, J Muncan, D Stamenkovic, M Jokanovic, I Matta

012017 ECSIN’s Methodological Approach for Hazard Evaluation of Engineered Nanomaterials ................................. 141  
  L Bregoli, F Benetti, M Venturini, E Samboni

012018 Aerosol Size Distribution Estimation and Associated Uncertainty for Measurement with a Scanning Mobility Particle Sizer (SMPS) ........................................................................ 151  
  L Coquelin, N Fischer, C Motzkus, T Mace, F Gensdarmes, L L Bruquet, G Fleury
012019 Using a PBPK Model to Study the Influence of Different Characteristics of Nanoparticles on Their Biodistribution .................................................................................................................. 161
D Li, C Emond, G Johansson, O Jolliet

012020 Cytotoxicity and Genotoxicity of Biogenic Silver Nanoparticles .......................................................... 168
R Lima, L O Feitosa, D Ballottin, P D Marcato, L Tasic, N Durán

012021 Iron Oxide Nanoparticles Show No Toxicity in the Comet Assay in Lymphocytes: A Promising Vehicle As a Nitrile Oxide Releasing Nanocarrier in Biomedical Applications .................................................. 176
R De Lima, J L Oliveira, P S K Murakami, M A M Molina, R Itri, P S Haddad, A B Seabra

012022 Translocation of SiO2-NPs Across in Vitro Human Bronchial Epithelial Monolayer ......................... 184
J George, S Vranic, S Boland, M C Borot, F Marano, A Bacea-Squiban

012023 Development of a Dose-controlled Multiculture Cell Exposure Chamber for Efficient Delivery of Airborne and Engineered Nanoparticles .......................................................................................................................... 194
A Asimakopoulou, E Daskalos, N Lewinski, M Riediker, E Papaioannou, A G Konstandopoulos

012024 Predictive Tests to Evaluate Oxidative Potential of Engineered Nanomaterials ............................................... 204
M Ghiazza, E Carella, S Oliaro-Bosso, I Corazzari, F Viola, I Fenoglio

012025 Comparison of Toxicity of Uncoated and Coated Silver Nanoparticles ................................................ 213
K C Nguyen, V L Seligy, A Massarsky, T W Moon, P Rippstein, J Tan, A F Tayahali

012026 An Impedance-based High-throughput Method for Evaluating the Cytotoxicity of Nanoparticles ........................ 228
M R Cimpan, T Mordal, J Schölermann, Z E Allooni, U Piquetti, E Cimpan

012027 Comparative Study of Neurologic Effects of Nano-TiO2 Versus SiO2 After Direct Intracerebral Exposure in Mice .......................................................................................................................... 238
A Balvy, N Thieriet, L Lakhdar, A Benczik

012028 Application of in Vitro BBB Model to Measure Permeability of Nanoparticles ........................................ 245
S Hanada, K Fujoka, Y Inoue, F Kanaya, Y Manome, K Yamamoto

012029 ROS Evaluation for a Series of CNTs and Their Derivatives Using an ESR Method with Dpmo ................. 250
S Tsurowka, K Takeuchi, K Koyama, T Noguchi, M Endo, F Tristan, M Terrones, H Matsumoto, N Saito, Y Usui, D W Porter, V Castranova

012030 Violacein/Poly(-Caprolactone)/Chitosan Nanoparticles Against Bovine Mastitis: Antimicrobial and Ecotoxicity Evaluation .......................................................................................................................... 258
E Berni, P D Marcato, G Nakazato, R K T Kobayashi, F I Vacchi, G A Umhuzeiro, N Durán

012031 In Vivo Toxicity of Enoxaparin Encapsulated in Mucoadhesive Nanoparticles: Topical Application in a Wound Healing Model ........................................................................................................................ 265
S C Huber, P D Marcato, R M Barbosa, N Durán, J M Annichino-Bizzacchi

012032 Immunological Assays as an Opportunity of Assessment of Health Risks of Airborne Particle Mixtures Including Nanoparticles ................................................................. 270
T Brzicová, I Lochman, P Daniełka, A Lochmanová, K Lach, V Micka

012033 Morphological and Cytohistochemical Evaluation of Renal Effects of Cadmium-doped Silica Nanoparticles Given Intratracheally to Rat .......................................................................................... 280
T Coccini, E Roda, S Barni, I Manzo

012034 Nitric Oxide Releasing Iron Oxide Magnetic Nanoparticles for Biomedical Applications: Cell Viability, Apoptosis and Cell Death Evaluations ................................................................. 288
R De Lima, J L De Oliveira, A Ludescher, M M Molina, R Itri, A B Seabra, P S Haddad

012035 Cytotoxicity of Solid Lipid Nanoparticles and Nanostructured Lipid Carriers Containing the Local Anesthetic Dibucaine Designed for Topical Application .................................................... 295
R M Barbosa, C M G Da Silva, T S Bella, D R De Araújo, P D Marcato, N Durán, E De Paula

012036 Nanoparticles in Paints: A New Strategy to Protect Façades and Surfaces? ............................................. 303
J-P Kaiser, L Dienier, P Wick

012037 Toxicokinetics of Zinc Oxide Nanoparticles in Rats .................................................................................. 313
H E Chung, J Yu, M Baek, J A Lee, M S Kim, S H Kim, E H Maeng, J K Lee, J Jeong, S J Choi

ENVIRONMENTAL INTERACTIONS

012038 Enhanced Cytotoxicity of Anticancer Drug Delivered by Novel Nanoscale Polymeric Carrier .................. 320
R Stoka, N Boiko, Y Senkiv, Y Shlyakhthina, R Parsehak, N Finiuik, V Filyuk, R Bilyy, Y Kit, N Skorohyd, O Klyuchivska, A Zaichenko, N Mitina, A Ryhbeve

012039 Role of Water Temperature in the Fate and Transport of Zinc Oxide Nanoparticles in Aquatic Environment .......................................................................................................................... 328
S M Majedi, H K Lee, B C Kelly

012040 Characterizing Nanoparticles Reactivity: Structure-Photocatalytic Activity Relationship .................... 336
J Piella, N G Bastús, E Casals, V Puntes
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison of Effects on Crustaceans: Carbon Nanoparticles and Molybdenum Compounds Nanowires</td>
<td>343</td>
</tr>
<tr>
<td>012041 A Baumerte, G Sukale, J Zavickis, I Putna, M Balode, A Mrzel, M Knite</td>
<td></td>
</tr>
<tr>
<td>Metal Oxide Nanoparticle Transport in Porous Media – An Analysis About (Un)Certainties in Environmental Research</td>
<td>351</td>
</tr>
<tr>
<td>012042 I Heidmann</td>
<td></td>
</tr>
<tr>
<td>Carbon Nanotubes Enhanced the Lead Toxicity on the Freshwater Fish</td>
<td>361</td>
</tr>
<tr>
<td>012043 D S T Martinez, O L Alves, E Barbieri</td>
<td></td>
</tr>
<tr>
<td>Monitoring Migration and Transformation of Nanomaterials in Polymeric Composites During Accelerated Aging</td>
<td>369</td>
</tr>
<tr>
<td>012044 G Vilar, E Fernández-Roxas, V Puntes, V Jamier, L Aubouy, S Vázquez-Campos</td>
<td></td>
</tr>
<tr>
<td>Nanoparticle Release from Nanocomposites Due to Mechanical Treatment at Two Stages of the Life-cycle</td>
<td>379</td>
</tr>
<tr>
<td>012045 D Göhler, A Nogowski, P Fiala, M Stintz</td>
<td></td>
</tr>
<tr>
<td>On Nanoparticles Release from Polymer Nanocomposites for Applications in Lightweight Automotive Components</td>
<td>389</td>
</tr>
<tr>
<td>012046 S Sachse, L Gendre, F Silva, H Zhu, A Leszcynska, K Pielichowski, V Ermini, J Njuguna</td>
<td></td>
</tr>
<tr>
<td>Behaviour of Nanoparticles During High Temperature Treatment (Incineration Type)</td>
<td>396</td>
</tr>
<tr>
<td>012047 S Derrough, G Raffin, D Locatelli, P Nobile, C Durand</td>
<td></td>
</tr>
<tr>
<td>Exploring Release and Recovery of Nanomaterials from Commercial Polymeric Nanocomposites</td>
<td>403</td>
</tr>
<tr>
<td>012048 M Busquets-Fité, E Fernandez, G Janer, G Vilar, S Vázquez-Campos, R Zanasca, C Citterio, L Mercante, V Puntes</td>
<td></td>
</tr>
<tr>
<td>Potential Release of Carbon Nanotubes from Their Composites During Grinding</td>
<td>413</td>
</tr>
<tr>
<td>012049 I Ogura, M Kofuku, M Shibeta, M Uejima, K Saito, N Hashimoto, A Kishimoto</td>
<td></td>
</tr>
<tr>
<td>Towards Large Scale Aligned Carbon Nanotube Composites: an Industrial Safe-by-design and Sustainable Approach</td>
<td>419</td>
</tr>
<tr>
<td>012050 P Boulanger, L Belkadi, J Descarpentries, D Portelet, E Hibert, A Brouzes, M Mille, S Patel, M Pinault, C Reynaud, M Mayne-L’Hermite, J M Decamps</td>
<td></td>
</tr>
<tr>
<td>Plasma Polymerized Thin Coating As a Protective Layer of Carbon Nanotubes Grafted on Carbon Fibers</td>
<td>431</td>
</tr>
<tr>
<td>012051 A Einig, P Rumeau, S Desrousseaux, Y Magga, J B Bai</td>
<td></td>
</tr>
<tr>
<td>Silica-coating As Protective Shell for the Risk Management of Nanoparticles</td>
<td>438</td>
</tr>
<tr>
<td>012052 D Gardini, M Blosi, C Delpino, S Ortelli, A L Costa</td>
<td></td>
</tr>
<tr>
<td>Development and Optimization of a Secure Injection CVD Process to Grow Aligned Carbon Nanotubes on Large Substrates</td>
<td>446</td>
</tr>
<tr>
<td>012053 S Patel, Y Magga, L Belkady, E Hibert, D Portelet, P Boulanger, M Pinault, M Mayne-L’Hermite</td>
<td></td>
</tr>
<tr>
<td>from Safe Nanomanufacturing to Nanosafe-by-design Processes</td>
<td>454</td>
</tr>
<tr>
<td>012054 F Schuster, F Lomello</td>
<td></td>
</tr>
<tr>
<td>Evaluating Performance of Containment Equipment Designed for Handling Manufactured Nanomaterials by Use of Nanoparticle Tracer</td>
<td>503</td>
</tr>
<tr>
<td>012055 S Artous, P Bombardier, S Derrough, D Locatelli, P Nobile, C Durand</td>
<td></td>
</tr>
<tr>
<td>012056 L Vinches, P Dolez, K J Wilkinson, S Hallé</td>
<td></td>
</tr>
<tr>
<td>Release Characteristics of Single-wall Carbon Nanotubes During Manufacturing and Handling</td>
<td>520</td>
</tr>
<tr>
<td>012057 I Ogura, M Kotake, N Hashimoto, K Gotoh, A Kishimoto</td>
<td></td>
</tr>
<tr>
<td>Mapping the Use of Engineered NM in Quebec’s Industries and Research Laboratories</td>
<td>529</td>
</tr>
<tr>
<td>012058 C Ostigay, C Emond, I Dossa, Y Malki, C Boily, D Roughley, A Plavski, C-A Endo</td>
<td></td>
</tr>
</tbody>
</table>
ETHICS AND SOCIETAL ISSUES

012059 the Social Context of Nanotechnology and Regulating Its Uncertainty: A Nanotechnologist Approach
V Jamier, I Gispert, V Puntes

012060 Latest Research Results on the Effects of Nanomaterials on Humans and the Environment: DaNa – Knowledge Base Nanomaterials
C Marquardt, D Kühnel, V Richter, H F Krug, B Mathes, C Steinbach, K Nau

COMMERCIAL EQUIPMENT

012061 NanoScan SMPS – A Novel, Portable Nanoparticle Sizing and Counting Instrument
T Tritscher, M Beeston, A F Zerrath, S Elzey, T J Krinke, E Filimundi, O F Bischof

RISK MANAGEMENT FOR OHS EXPERTS

012062 Overview of Risk Management for Engineered Nanomaterials
P A Schulte, C L Geraci, L L Hodson, R D Zumwalde, E D Kuempel, V Murashov, K F Martinez, D S Heidel

012063 Risk Assessment of Nanomaterials and Nanoproducts – Adaptation of Traditional Approaches
J Jahnel, T Fleischer, S B Seitz

012064 Risk Assessment Method for the Implementation of Materials Divided Up to the Nanometric Scale
L Gridelet, P Delbecq, L Hervé, G Fayet, D Fleury, S Kowal, P Boissolle

012065 Concerns Related to Safety Management of Engineered Nanomaterials in Research Environment
A Groso, T Meyer

012066 French Registry of Workers Handling Engineered Nanomaterials As an Instrument of Integrated System for Surveillance and Research
I G Canu, O Boutou-Kempf, L Delabre, S Ducamp, Y Iwatsubo, J L Marchand, E Imbernon

REGULATION AND STANDARDIZATION FOR NANO PRODUCTS

012067 Legal Issues of the Environmental Safety Regulation in the Sphere of Nanotechnology in Russian Federation
E A Belokrylova

012068 Regulation and Safety Implementation of Nanotechnology for Chemical Enterprises in the Central Europe Space
A Falk, S Hartl, F Sinner

012069 Defining Occupational and Consumer Exposure Limits for Nanomaterials – First Experiences from REACH Registrations
K Aschberger, Z Kříšlova, G Falck, F M Christensen

012070 Development of an Integrative Program of Nanosafety: Promote the Coordination Between Industries and Risk Assessor
C Emond, S Kouassi, F Schuster

012071 Managing Operating Procedures in Distributed Collaborative Projects
A Hool, M-G B Ollivier, F Roubert

Author Index