

2° Workshop AgriNanoTechniques Nanomaterials for products and application in agriculture

12 settembre 2018, Facoltà di Ingegneria Civile e Industriale, Università La Sapienza
via Eudossiana 18, ROMA

With the world's population expected to exceed nine billion by 2050, scientists are working to develop new ways to meet rising global demand for food, energy and water without increasing the strain on natural resources. Organizations including the World Bank and the U.N. Food and Agriculture Organization are calling for more innovation to address the challenges of the agri-food sector.

Agriculture uses inefficiently the conventional inputs (water, energy, fertilizers, pesticides) and a significant fraction of them are lost or became unavailable to the crops. At the same time, agriculture (cultivation of crops, livestock and deforestation) is a major contributor to greenhouse gas emissions.

The developing Agri-Nanotechniques will be implemented within the evolving science of precision agriculture, in which farmers use technology to target their use of water, fertilizer, plant protection products and other inputs. A second, broad potential application concerns the issues of reduction and valorization of agri-food wastes. The introduction of nanotechnologies in agriculture still need deepen both basic and applied knowledge, however several promising results were achieved, so far. A huge development is taking place in this sector, therefore nanotech applications currently under development will soon be overtaken

NanoInnovation 2018 hosts the 2nd edition of the workshop "AgriNanoTechniques" co-organized by the Universities of Bologna, Parma, Verona and Udine. The workshop will be the forum for discussing the perspective of nanotechnologies in the primary sector among the stakeholders and scientific research.

SESSION 1 – NANO-PERSPECTIVES IN THE AGRI-FOOD SECTOR

Chair: Nelson Marmiroli, University of Parma

The huge potential of nanotechnologies in the primary sector is strongly dependent on the development of an adequate regulatory framework. While this is currently under development in EU, is needed to encourage a debate on the nano-perspectives in the agri-food sector among the stakeholders.

11.00 Ana Maria Rincon *European Food Safety Authority (EFSA)*
Towards EU legislation on nanomaterials/ENMs in food.

11.30 Paride Mantecca *University of Milano Bicocca*
Safe(r) nanomaterials for the Agri-Food sector: The Nano bioscience perspective.

11.50 Michele Iafisco *CNR - Istituto di Scienza e Tecnologia dei Materiali Ceramici (ISTEC)*
From food industry by-products to smart nano-fertilizers: towards a circular economy of P.

12.10 Giuseppe Ciuffreda *Fabbrica Cooperativa Perfosfati Cerea*
Market perspectives for smart fertilizers.

12.30 Felice Adinolfi *University of Bologna – Scientific Committee of Coldiretti*
Nanotechnology and the future of agricultural supply chain

SESSION 2 – NANOMATERIALS AND PLANT NUTRITION

Chair: Zeno Varanini, University of Verona

The development and utilization of the potential of nanotechnologies in crop fertilization is a high priority in fertilizer research with the main target to prevent or minimize nutrient losses. It is expected that properly designed nanostructures will allow controlled release of nutrients also synchronized with the nutritional needs of the crops. This session put together researchers which are currently involved in studies and projects on this issue.

14.00 Luca Marchiol *University of Udine*

Smart fertilizers: Nano-options towards an improvement of Nutrient Use Efficiency.

14.20 Marta Marmioli *University of Parma*

Possible applications of engineered nanomaterials in agriculture: the issue of interaction.

14.40 Davide Segà *University of Verona*

FePO₄ nanoparticles as a source of nutrients for plants.

15.00 Ilaria Clemente *University of Firenze*

Contributions of nanoscience in designing innovative vectors for agrochemical delivery.

SESSION 3 – AGRINANOTECHNIQUES RESEARCH PATHWAYS

Chair: Luca Marchiol, University of Udine

The potential of nanotechnology in the primary sector cover with very broad spectrum of applications. Some of these applications are able to make more effective traditional processes, while other could open new productive perspectives, for example towards the bioeconomy. In this session, some examples of topics currently explored at the labs of some Italian universities will be presented.

16.00 Ilaria Colzi *University of Firenze*

Copper nanoparticles from agricultural wastes: a case study on blueberry local processing.

16.20 Enrico Braidot *University of Udine*

Hydroxyapatite NPs impact on tomato plantlet metabolism and seed germination

16.40 Alessandra Zambonelli *University of Bologna*

Iron exopolysaccharide nanoparticles to improve the production of truffle mycorrhized plants

17.00 Federica Tramer *University of Trieste*

Chitosan NPs as delivery system for plant bio-agents release: biomedical and agri-food applications