

## **New Visions in Clay Science: bio-nanoclays in medicine**

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This thematic session will focus on ‘How to improve and discover the biocompatible and ecofriendly nanoclays from laboratory benches to industrial commercialization for health and well-being?, and therefore, the final goal is to draw experts from across international communities as well as industry.

This session, will consist of research on nanoclays in biological and medicinal applications. Natural and modified clays have been consistently used in nanoscience due to their abundance and diversity in nature, curative and protective properties, and specific physicochemical characteristics including high surface reactivity, swelling capacity and colloidal nature. Discovery and development of advanced biofunctional nanoclay hybrid materials, including the drug delivery vehicles, antibacterial materials and bioremediation supporters, are consistently needed for health and welfare of human life. Challenges and attempts for new bio-nanoclay materials and biological systems have some obstacles such as nanotoxicity. Through interdisciplinary research and collaboration, however, limitations to development of bio-nanoclay hybrid materials can be overcome.

This thematic session includes the following topics:

- The natural and modified clays in theranostics (individualized diagnostic and therapeutic capabilities): Pharmaceutical materials, drug delivery system, therapy, diagnosis and biosensors
- Bio-nanoclay hybrids for healthcare: Pelotherapy, beauty –therapeutic and antibacterial clays
- Nutritional and agricultural applications: bioremediation, animal nutrition/medicine, veterinary, pesticide, water treatment using bio-nanoclays
- Molecular simulations between clays and ionic material including heavy metal ions, proteins, organic materials and bacteria