

Thermoelectricity: from the iron arc of the epoch of Alessandro Volta to ferrofluids today

Monday, 21 December 2020 14:30 (45 minutes)

I will start my talk with the review of the exciting story of thermoelectricity in which were involved such famous scientists as Luigi Galvani, Alessandro Volta, Thomas Seebeck, Jean Charles Athanase Peltier, Walter Nernst, William Tompson, Nevil Mott, Lars Onsager, philosopher Georg Wilhelm Hegel, political figures like Napoléon Bonaparte.

Then I will pass to the main concepts of thermodynamic and kinetic approaches to the description of thermoelectric and thermomagnetic phenomena, will discuss the cases of their giant manifestation. I will formulate the requirements for the materials necessary for practical applications of thermoelectricity and present already available new materials.

In the final part of my talk I will shortly present the Future Emergent Technologies European Project MAGENTA - MAGnetic nanoparticle based ENergy materials for Thermoelectric device Applications (CEA - CNR - FIAT-DEMOCRITOS -).

Primary author: Prof. VARLAMOV, Andrey (Istituto superconduttori, materiali innovativi e dispositivi (SPIN-CNR))

Co-authors: Ms CHIKINA, Ioulia (LIONS, NIMBE, CEA, CNRS, Université Paris-Saclay); Mr PEDDIS, Davide (Dipartimento di Chimica e Chimica Industriale, Università di Genova); Prof. SHARAPOV, Sergei (Bogolyubov Institute for Theoretical Physics)

Presenter: Prof. VARLAMOV, Andrey (Istituto superconduttori, materiali innovativi e dispositivi (SPIN-CNR))

Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics