ACCADEMIA NAZIONALE DEI LINCEI

CENTRO LINCEO INTERDISCIPLINARE «BENIAMINO SEGRE»

23 giugno 2014
Roma, Palazzo Corsini, Via della Lungara 10

ROUNDTABLE

"From Life to Life: Through New Materials and Plasmonics"

It is a multidisciplinary scientific initiative based on the idea that it is possible and necessary to harness natural architectures and their related functions to create unconventional materials to improve our life. This approach is a bio-inspired pathway to design innovative materials with peculiar physical properties for life applications. During the last two decades, profound understanding of the nanoscale world has provided a new scientific prospective, new mysteries, new ideas. This initiative –From Life to Life: through new materials and plasmonics- is a fascinating scientific challenge already undertaken in previous research projects aimed to develop "metamaterials," a new class of nanostructured materials with extraordinary physical properties, designed and fabricated with the objective to go beyond nature. The emerging theme from these cross disciplinary activities is that the structures and functions of life serves as a critical point of inspiration for creating novel approaches to difficult problems: life building blocks can be used to help life. We need selectivity, high resolution, compactness, speed, and efficiency – unique features that have to be integrated in a single system to work synergistically for a precise objective. Life has already designed and selected - through long reiterative processes - several bio-systems possessing specific features. Our main aim is to mimic natural structures-functions to design innovative materials through a multipronged bottom-up approach. This research context is necessarily interdisciplinary and establishes natural links among multiple and diverse fields such as Physics, Engineering, Biology, Medicine, Material Sciences, Mathematics and Chemistry.

PROGRAMME:

15:00 *Opening* (T. Orlandi - Director of the Centro Interdisciplinare "B. Segre")

15:05 R. Bartolino - Calabria University, Appointed Centro Interdisciplinare "B. Segre": *Introductory Remarks*

15:15 G. Strangi - Dept. of Physics - Case Western Reserve University (USA):*Introduction*

15:30 R. Advincula - Dept. Macromolecular Science – CWRU and Univ. Houston (USA): *Nanochemistry: the big challenges*

15:45 F. Omenetto – Dept. of Biomolecular Engineering, Tufts University Boston (USA): *Biomaterials: Silk, the ancient material of the future*

16:00 F. Beltram - Dean of the Scuola Normale di Pisa (Italy): *Nanobiotechnology: new paradigms for the life sciences*

16:15 P. Barois - Centre Recherche Paul Pascal - CNRS Bordeaux (France): *Assembly across scales: Metamaterials*

16:30 D. Calvetti - Chair Department of Mathematics Case Western Reserve University (USA): *Life sciences through mathematical models*

16:45 M. Inguscio -Member of the Academy, President of the INRIM Torino (Italy): *Life sciences: new frontiers for metrology*

17:00 G. Starkman - Director of the Institute for the Science of Origins (USA): *Large scale evolutive systems: Foresights*

Convenors contributions

General Discussion

Closing and Remarks

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