

To.Sca.Lake 3.0

Total Scattering for Nanotechnology

*Program and
Book of Abstracts*



Villa del Grumello, Como, Italy, May 27th-31st, 2019

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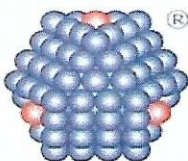
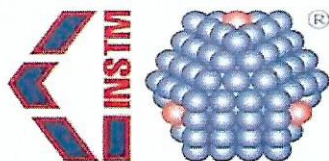
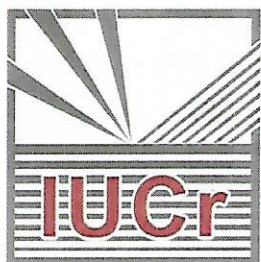
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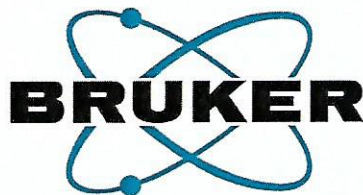
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The Organizing Committee of the To.Sca.Lake 3.0 shall observe the basic policy of non-discrimination and affirms the right and freedom of scientists to associate in international scientific activity without regard to such factors as ethnic origin, religion, citizenship, language, political stance, gender, sex or age, in accordance with the Statutes of the International Council for Science.

At this meeting no barriers will exist which would prevent the participation of bona fide scientists.

To.Sca.Lake 3.0: Total Scattering for Nanotechnology 2019

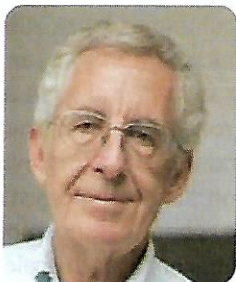
Nanoscience (the study of materials at the nanometer scale) and **Nanotechnology** (the manipulation of matter at the atomic, molecular and supramolecular scale, aiming at fabricating novel products) have the tangible opportunity of promoting new economical progresses and societal advances. The range of applications is measureless, encompassing fields as diverse as Chemistry, Materials and Environmental Science, Physics, BioMedicine, AgroFood and Pharma. Control over formation mechanisms and functionalities of engineered nanomaterials (organic, inorganic and hybrid) calls for the comprehension of properties distribution such as atomistic arrangement, crystal structure and defects, surface relaxation, size and shape, phase composition and supramolecular organization. Characterizing these complex systems at different length scales is crucial but still a challenging task.

To.Sca.Lake 3.0: Total Scattering for Nanotechnology on the Como Lake is the 3rd edition of a biennial series of Summer Schools that are organized within the initiatives of the Lake Como School of Advanced Studies and are fully dedicated to **fore-front characterization methods, based on scattering techniques** (from **X-rays** to **visible light**), developed for the multiple (atomic and nanometer) scale investigation of engineered nanomaterials. As for the previous edition (<http://tsnl.lakecomoschool.org>), the school intends to offer an extended overview on **theory, experiments** at synchrotron and Lab scale, and **modeling** of Wide Angle X-ray Total Scattering Techniques (**WAXTS**), embracing reciprocal (**DSE**) and real (**PDF**) space analysis, Small Angle X-ray Scattering (**SAXS**) and Small and Wide Angle Light Scattering (**LS**). Differences, complementarities and possibilities of combination of the different scattering techniques will be highlighted. The aim of the school is to deepen both theoretical and applied frontier developments in these fields. The Workshop is open to scholars and scientists in any area related to Nanoscience and Nanotechnology and it is especially addressed to **PhD students** and **young postdocs**.

Invited Speakers



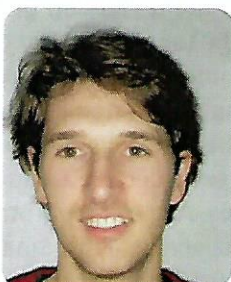
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O3

Investigation of nanocrystalline tungsten- and tellurium-based double and triple perovskites prepared by solution chemistry methods

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Perovskite materials exhibit interesting physical properties due to their exceptional structure. Those properties have been studied for various practical applications: from superconductors, electrode and electrolyte materials for fuel cells, catalytic converters in diesel vehicles, components for solar cells to the memory device components. While numerous metal oxide combinations with single, double and triple perovskite structure have been characterized so far, only few of them have been synthesized in nanocrystalline form. Since nanosized materials have exceptional properties due to the quantum size effect, nanocrystalline perovskites could possess interesting properties. Hereby we present nanocrystalline $A_3B_2(W/Te)O_9$ and $A_2B(W/Te)O_6$ ($A = Sr, Ba, Ca$; $B = Fe, Co, Mn, Ni$) with double and triple perovskite structure that have been synthesized using bottom up approach in liquid state. We investigated reaction mechanisms of synthetic routes, structurally characterized synthesized compounds and measured their properties in comparison with corresponding bulk materials.

Keywords: perovskite; solution chemistry synthesis; tungsten; tellurium



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This is to certify that **Jelena BIJELIĆ** has attended the **“TO.SCA.LAKE 3.0:
TOTAL SCATTERING FOR NANOTECHNOLOGY 2019”** Lake Como
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On behalf of the School Directors

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Como, 31 May 2019