

# WORKSHOP ON ANTI-BACTERIAL NANOSTRUCTURED SURFACES

as a part of

2<sup>nd</sup> World Congress on Recent Advances in Nanotechnology (RAN'17)



APRIL 4, 2017 | 1:00 PM TO 5:00 PM | BARCELONA, SPAIN

The meeting is focused on the discovery of anti-bacterial properties of nanostructured surfaces and highlight the progress and future directions in this field.

Ivanova, E. P.; Hasan, J.; Webb, H. K.; Truong, V. K.; Watson, G. S.; Watson, J. A.; Baulin, V. A.; Pogodin, S.; Wang, J. Y.; Tobin, M. J.; et al. **Natural Bactericidal Surfaces: Mechanical Rupture of Pseudomonas Aeruginosa Cells by Cicada Wings**. Small 2012, 8, 2489–2494.

Ivanova, E. P.; Hasan, J.; Webb, H. K.; Gervinskas, G.; Juodkazis, S.; Truong, V. K.; Wu, A. H. F.; Lamb, R. N.; Baulin, V. A.; Watson, G. S.; et al. **Bactericidal Activity of Black Silicon**. Nature Communications 2013, 4.

**The project at ResearchGate:** <https://www.researchgate.net/project/Anti-bacterial-nanostructures-and-biomimetic-materials>

The workshop will cover recent advances in design of the anti-microbial nanostructured surfaces including inspirational theoretical modelling and fabrication of biomimetic surfaces, their characterisation and in-vitro/in vivo validation of an exploitable end product.

Synthetic biocidal nanostructured surfaces could be applied, for instance, for decreasing the likelihood of contracting bacterial infections, for the prevention of infections after implant surgery. Biocidal surfaces would reduce the current dependency on antibiotics and chemical disinfection for the control of pathogenic bacteria. An in-depth understanding of mechano-biocidal effects would enable to optimize synthetic biocidal surfaces in a rational and controlled way.

## WORKSHOP TOPICS

- Fabrication techniques of nanostructured surfaces
- Biomimetics and natural nanostructured surfaces
- Mechano-biocidal action of nanostructured surfaces
- Modelling of nanostructured surfaces
- Applications in biomedical implants
- Applications in dental implants
- Microfluidic devices
- Drug delivery systems
- Nanotoxicology of nanostructured surfaces
- Nanostructured surfaces in regenerative medicine

## ORGANIZERS OF THE WORKSHOP



**Vladimir A. Baulin**  
University Rovira  
i Virgili, Spain

Dr. Vladimir A. Baulin leads a group of Soft Matter Theory group ([www.vbaulin.softmat.net](http://www.vbaulin.softmat.net)) at the University Rovira i Virgili, Tarragona Spain which has strong expertise in theory of polymer physics, soft matter theory and biophysics. He is a Coordinator of EU funded Initial Training Network SNAL: ([www.itn-snal.net](http://www.itn-snal.net)).



**Elena P. Ivanova**  
Swinburne University  
of Technology,  
Australia

Prof. Elena P. Ivanova leads Nano-biotechnology group ([www.swinburne.edu.au/research/our-research/access-our-research/](http://www.swinburne.edu.au/research/our-research/access-our-research/)) at Swinburne University of Technology, Melbourne Australia focusing on design, fabrication and operation of planar micro-devices; immobilization of bio-molecules and micro-organisms in micro/nano/environments, bacterial taxonomy and bacterial interactions with macro/micro/nano-structured surfaces.