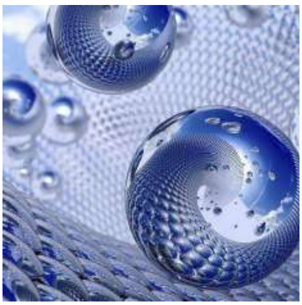
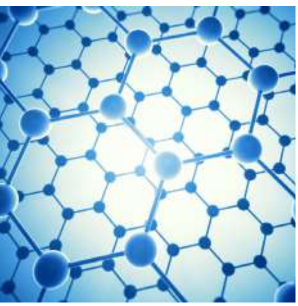
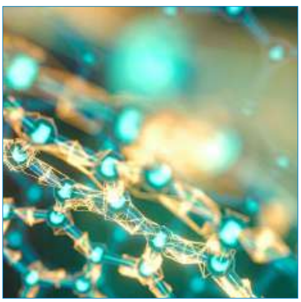
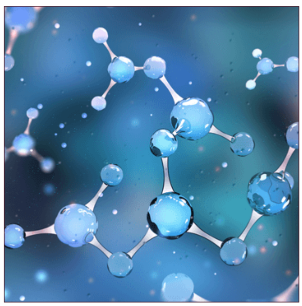
Keynote Forum
January 13, 2022

Nanomaterials Congress 2022



6th World Congress on

Nanomaterials

January 13, 2022 | Webinar

Pavel Osmera

Brno University of Technology, Czech Republic

Photocatalytic Decomposition of Viruses, Bacteria, Fungi and Odors into Harmless Atoms and Molecules

Photocatalysis breaks down viruses (including coronavirus and all its current and future mutations) into harmless atoms and molecules. The activated surface of titanium dioxide (TiO_2) removes binding electrons from the structures using UV light, which breaks down the structure of the virus into harmless molecules and atoms. UV light with a wavelength of about 365 nm (band A) is used to activate the photocatalytic surface, in contrast to hard radiation with a wavelength of about 200 nm (band C). Hard radiation kills living structures but does not break down into simpler structures. The easiest way is to use UV sunlight and paint a photocatalytic substance, for example, on the walls of houses. We use UV light generated by UV LEDs or UV lamps. The advantage of UV LEDs is that a low and safe DC supply voltage of 12 or 24 V can be used. UV lamps for higher outputs use an AC supply with a voltage of 230 V. Fans are used to flow air around the photocatalytic layer. The best activated surface is a helix that has a large surface and low air resistance. I have filed a patent registration for the construction of air purifiers, which work on the principle described above. Testing of prototypes of various constructions has already been performed with very good results. We can only hope that this principle will help slow down or stop the spread of viral disease. Photocatalysis also decomposes harmful bacteria, fungi, unpleasant odors, cigarette smoke and chimney smoke, and harmful gases from cars and motorcycles.

Conclusion: It is certainly less dangerous to break down viruses and bacteria into harmless molecules than to be vaccinated, for example, against coronavirus. It is not known what long-term negative consequences vaccination will have on some organs of the human body. Therefore, the use of photocatalytic decomposition of viruses in hospitals and households, etc. is very effective as prevention.

Speaker Biography

Pavel Osmera, a teacher at the Institute of Automation and Computer Science, Dept. of Applied Computer Science, Brno University of technology. Scientific activities: physical chemistry, evolutionary optimization. His research areas are physical chemistry, evolutionary optimization, Nanomaterials.

e: pavelosmera789@seznam.cz

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Alison M Mackay

Salford Royal NHS Foundation Trust, UK

Nanotheranostics and Human Skin

A recent article on Photodynamic therapy (PDT) for treating skin infection (in review) considers a range of technologies effective in eradicating microbes without building up new resistance, alongside horizontal and vertical infection control strategies. PDT features in current international dermatological guidelines and is particularly recommended for the treatment of Acne, Warts and Cutaneous Leishmaniasis. However, limitations on sensitivity, specificity and accessibility have been addressed in the literature by conjugation of photosensitisers to cationic molecules, antimicrobial peptides, antibodies, targeted antibiotics and nanomaterials. Nitrous oxide, gold nanorods, polyvalent ligand strategies and their resulting Photodynamic and Photothermal effects are considered. Adjunct illumination to modulate or monitor treatment with nanomaterials–bioluminescence-is also discussed and more widely researched applications of nanotheranostics reviewed.

Speaker Biography

Alison Mackay studied Physics and Medical Physics culminating in a PhD thesis entitled 'Estimating Children's Visual Acuity with Steady-state Evoked Potentials' then registration with the UK health and care professionals council as a Clinical Scientist. The software she developed and evaluated for her doctorate is now the subject of U.S. patents, and its report is highly cited in the academic literature. In the interim, Alison has worked clinically in Ophthalmology, Urology and Dermatology while performing clinical research, and translational studies into diagnostic methodology.

e: alison.mackay@srft.nhs.uk

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Dhanesh G Mohan

Shandong University, China

Quantum Dots for Additive Manufacturing

This experimentation characterises a nanocomposite material to evaluate its suitability for additive manufacturing. The experiment successfully synthesised CdSe quantum dots (QDs) and introduced them (in liquid and solid form) into photopolymer printing media. Suspensions prepared with the addition of QDs in a solvent-based solution showed a decrease in viscosity with an increase in the volume of QDs added. When solid QDs were used, the viscosity of the resulting nanosuspensions remained similar to the pure photopolymer. Moreover, the research demonstrated the feasibility of "3D printing" the suspension by manually curing the photopolymer with UV light. These results indicate that the cure depth of the resulting samples does not depend on the loading of the QDs at the low concentrations tested. Also studied the stability of these nanosuspensions over time by evaluating their physical properties such as surface tension, viscosity, and cure depth.

Speaker Biography

Dhanesh G Mohan is a licensed Professional Engineer (P.E), Chartered Engineer (C.Eng), writer and educator. He is a Postdoctoral Research Fellow of the Institute of Materials Joining at Shandong University, Jinan, China. Dhanesh received his PhD in Mechanical Engineering from Anna University, Chennai, India. He authored two books titled "Additive Manufacturing for High Entropy Alloys" and "Advances in Friction Stir Welding", considered to publish by Springer Nature and Taylor and Francis (CRC Press). His research mainly focused on Additive Manufacturing (3D printing of high entropy alloys, 3D composites and ceramics printing, and big area additive manufacturing), Surface coating methods, fabrication of high entropy alloys, Corrosion studies, Quantum dots, and Hybrid friction stir welding methods (Laser-assisted FSW, Ultrasonic vibration-assisted FSW, Induction assisted FSW and FSP).

e: dhanesh@sdu.edu.cn

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