



Dr. Archana R. Deokar

Assistant Professor, Chemistry,

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Educational profile

Postdoc: Bar-Ilan University, Ramat Gan, Israel, 2014-2016

PhD: National Tsing Hua University, NTHU, Hsinchu, Taiwan, 2007-2013

M.Sc.: Department of Chemistry, Savitribai Phule Pune University, SPPU, Pune, Maharashtra, 2004-2006

B.Sc.: Savitribai Phule Pune University, SPPU, Pune, Maharashtra, 2001-2004

Key Skills

Dr. Archana R. Deokar is capable of providing comprehensive solutions to industry and other government bodies in the following areas

- 1) Novel methods for the synthesis and characterization of Carbon-based nanomaterials such as Graphene, Carbon-nanotubes and Carbon nanodots
- 2) Functionalized graphene and carbon-nanotubes for catalysis and biomedical applications

Background

Joined GSFC on 16th January 2023

Scholarships and achievements

Dr. Archana Deokar is currently working as an Assistant Professor of Chemistry with School of Science, at GSFC. Her research interests include synthesis of magnetic nanoparticles and metal or metal oxide nanoparticles anchored on graphene and carbon nanotubes for biomedical applications. She earned her PhD degree from National Tsing Hua University, Hsinchu, Taiwan in 2013. She is a recipient of Taiwan Government Fellowship funded by Ministry of Education, Taiwan. She gained her Postdoctoral experience by working with Professor Aharon Gedanken from 2013-2016 at Bar-Ilan University, Israel. She has published eight papers in peer-reviewed scientific journals of international repute, one US patent and two book chapters. In addition to

aforementioned achievements she has accomplished following major international projects funded by Cariplo, Italy and US Naval Research Laboratory.

Most important research projects and achievements

Project title: “Do new generations of nano-antibacterials **OVER**come the epithelial barriers posing human health at risk? A predictive nano**TOX**icology study (**OVER NanoTOX**), *Italian Project funded by Cariplo.*

Achievement: 1) P. Mantecca, K. Kasemets, A. R. Deokar, I. Perelshtein, A. Gedanken, Y.K. Bahk, B. Kianfar, J. Wang “Airborne nanoparticle release and toxicological risk from metal oxide-coated textiles: toward a multi-scale safe-by-design approach” *Environ. Sci. Technol., 2017, 51 16, 9305–9317 SCI impact factor of Environmental Science and Technology 11.36 DOI: 10.1021/acs.est.7b02390.*

2) A. R. Deokar, I. Perelshtein, M. Saibene, N. Perkes, P. Mantecca, Y. Nitzan, A. Gedanken, “Antibacterial and In vivo Studies of a Green, One-Pot Preparation of Copper/Zinc Oxide Nanoparticle-Coated Bandages”, *Membranes 2021, 11, 462 SCI impact factor of Membranes : 4.106 <https://doi.org/10.3390/membranes11070462P>*

3) K. Kasemetes, A. R. Deokar, I. Perelshtein, A. Gedanken, P. Mantecca, “Toxicity and effect of surface reactivity of sonochemically synthesized CuO and ZnO nanoparticles to human alveolar epithelial cells A549” Bar-Ilan University Center for Advanced Materials and Nanotechnology, Ramat-Gan 52900, Israel, Department of Earth and Environmental Sciences, Particulate Matter and Health Risk (POLARIS) Research Centre, University of Milano, Bicocca, Milano 20126, Italy (*Under preparation*).

Project title: “Active Bandages and Creams Containing Metal Oxides Nanoparticles to Treat Multidrug Resistant Bacteria-Infected Wounds.” *US Naval Research Laboratory Project.*

Achievement: A. R. Deokar,[†]Y. Shalom, I. Perelshtein, N. Perkas, E. Banin, and A. Gedanken, “A topical antibacterial ointment made of Zn-doped copper oxide nanocomposite”, Bar-Ilan University Center for Advanced Materials and Nanotechnology, Ramat-Gan 52900, Israel, *J. Nanopart. Res. (2016) 18:218.*

Most important three publications

1) A. R. Deokar, [†]M. C. Wu, [†]J. H. Liao, P. Y. Shih, and Y. C. Ling “Graphene-Based Photothermal Agent for Rapid and Effective Killing of Bacteria”, *ACS Nano*, 2013, 7, 1281–1290(† indicates equal contribution) *ISSN no. 1936-0851, SCI impact factor of ACS Nano: 18.03, Citations: 371.*

2) Manteca, K. Kasemets, A. R. Deokar, I. Perelshtein, A. Gedanken, Y.K. Bahk, B. Kianfar, J. Wang “Airborne nanoparticle release and toxicological risk from metal oxide-coated textiles: toward a multi-scale safe-by-design approach” *Environ. Sci. Technol.*, DOI: **10.1021/acs.est.7b02390**, *SCI impact factor of Environmental science and technology: 11.36, Citations: 29*

3) “Graphene-Based Photothermal Antibacterial Material”, **US 20150004055 A1**, Y. C. Ling, A. R. Deokar, M. C. Wu, C. H. Liao, P. Y. Shih, National Tsing Hua University, Taiwan, **2015**.