

Department of Chemistry, Panjab University, Chandigarh
Cordially invites you to the

6th PRAN NATH VOHRA LECTURE

by

Professor Matthias Epple

Faculty of Chemistry, University of Duisburg-Essen, Germany

Title of Talk: Biological effects of metallic and bimetallic nanoparticles (silver, gold, platinum metals)

Date & Time: March 28, 2018 (Wednesday) at 4:00 PM

Venue: Seminar Hall, Department of Chemistry, P.U. Chandigarh

Chief Guest : Prof. Raghuram Rao Akkinapally, Director NIPER, Mohali

Guest of Honor: Prof. R.K. Johal, Director RPC, P.U. Chandigarh

Prof. Alok Srivastava
Chairman

Dr. G.R. Chaudhary
Convener
(Pran Nath Vohra Trust Fund)

Prof. Matthias Epple is Professor of Chemistry in University of Duisburg-Essen since 2003.

He obtained his PhD degree from TU Braunschweig followed by postdoctoral studies at University of Washington, University of Hamburg and Royal Institution, London. He is the

recipient of various awards including **Fellow of Royal Society of Chemists (FRSC)**, Netzsch-GEFTA Young Scientist Award of the Thermoanalytical Society (GEFTA); Heinz

Maier-Leibnitz Award of the Deutsche **Forschungsgemeinschaft (DFG)** and Award

"Essen forscht und heilt" in the category "Medicine and Science" by the Essener

Gesundheits forum. He has been incessantly associated with various scientific advisory bodies and selection committees including prestigious German Academic Exchange Service (DAAD) . He is the member of the editorial

board of *NanoBioMedicine* (since 2010), *RSC Advances* (since 2011), *Engineering of Biomaterials* (since 2012), *Bulletin of Siberian Medicine* (since 2013) and *Advanced Biomaterials and Devices in Medicine* (since 2015). Prof .

Epple is a leading researcher working on development of biomaterials and functionalization of nanoparticles for gene and drug delivery and immunization applications.



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Abstract:

Metallic nanoparticles are used in nanomedicine since decades, due to their easy preparation and the possibility for selective surface functionalization. In particular, noble metals have been used as they are typically biologically inert in the body, i.e. they do not dissolve and they do not have harmful side-effects. Silver is an exception because its antibacterial effect is due to the release of silver ions. Alloyed nanoparticles give a combination of the properties of the single metals, e.g. antibacterial effects and surface plasmon resonance (SPR). Synthetic concepts for preparation and characterization of such nanoparticles are presented. Bimetallic nanoparticles with different elemental distribution (core-shell or alloy or graded alloy) were analyzed by high-resolution transmission electron microscopy, including elemental distribution inside a nanoparticle. Besides such larger nanoparticles (size about 10 nm), recent developments on ultrasmall gold nanoparticles are shown. They are smaller than common proteins, and they can be selectively functionalized to address specific surface epitopes of proteins.