



CSIR-NCL  
[www.ncl-india.org](http://www.ncl-india.org)



Venture Center  
[www.venturecenter.co.in](http://www.venturecenter.co.in)



Pune Chapter of the Association  
of British Scholars (ABS)  
<http://www.abspune.org/>

The **eighth** lecture of the  
[Innovation and Technology Enterprise](#)  
[Lecture Series](#)

## Scalable Functional Nanocoatings for Technological and Societal Applications

By

**Professor Jas Pal Badyal FRS**

(Chemistry Department, Durham University,  
England, UK; Co- Founder of Surface  
Innovations Ltd; Dow Corning Plasma Ltd; and  
P2i Ltd)

On

**Wednesday, 29 August 2018**

at **3.45 pm – 5.30 pm** in the  
NCL Auditorium  
CSIR-National Chemical Laboratory  
Pashan Road, Pune – 411008

*Lecture is open to all.*

*Pre-registration by visitors to NCL is requested  
at*

<https://bit.ly/2t4Eteh>

*Visitors to NCL should carry photo ID card.*

*First-come-first-serve seating.*

*Tea shall be served at 1545 hrs at the  
Auditorium Foyer*



**Professor Jas Pal Badyal FRS**

### Abstract

The worldwide market for functional surfaces exceeds \$100 billion per annum (US Department of Energy). A key driver is the added value that can be imparted to commercial products through the molecular engineering of their surface properties. For example, the cleanliness of optical lenses, the feel of fabrics, the resistance of biomedical devices to bacteria, the speed of computer hard disks, and even the wear of car brake pads are all governed by their surface properties. The fabrication of such surfaces requires the incorporation of specific functional groups; for which there exists no shortage of potential methods including: self-assembled monolayers (SAMs), Langmuir-Blodgett films, dip-coating, grafting, chemical vapour deposition, to name just a few. However such techniques suffer from drawbacks including substrate-specificity (cannot be easily adapted to different materials or geometries) and environmental concerns associated with the utilization of solvents, strong acid / base media, or heat. A range of innovative solutions will be described for the molecular tailoring of solid surfaces. Applications will include: super-repellency, non-fouling, anti-fogging, thermoresponsive, rewritable bioarrays, opto-chiral, antibacterial, electrical barrier, water harvesting, capture and release, oil-water separation, and nano-actuation. ***This research has led to 41 patent families and the establishment of 3 successful start-up companies: Surface Innovations Ltd, Dow Corning Plasma Ltd, and P2i Ltd (2015 International Business Award for 'Most Innovative Company in Europe').***

### Speaker's Bio

Jas Pal Badyal FRS was awarded BA/MA (1985) and PhD (1988) degrees from Cambridge University; where he subsequently held a King's College Fellowship and the Oppenheimer Fellowship. In 1989 he moved to Durham University to take up a lectureship and was promoted to Full Professor in 1996. He is named as the primary author / inventor on 174 peer reviewed journal publications / 41 patent families, and has delivered 76 plenary / invited lectures at international conferences. He has been recipient of many honours relating to his work on Functional Surfaces, including the Royal Society of Chemistry Harrison Medal; the British Vacuum Council Burch Prize; the International Association of Advanced Materials Medal for 'Outstanding and Notable Contribution in the Field of Nanomaterials and Nanotechnology'; the Royal Society of Chemistry Tilden Medal; and in 2016 he was elected a Fellow of the Royal Society (FRS) — UK and Commonwealth National Academy of Sciences. ***His research has led to 3 successful start-up companies: Surface Innovations Ltd; Dow Corning Plasma Ltd; and P2i Ltd (2015 International Business Award for 'Most Innovative Company in Europe').***