THE UNIVERSITY OF SYDNEY

School of Chemical and Biomolecular Engineering

SEMINAR INVITATION

Preventing Bacterial Adhesion on Medical Grade Polymers Using Hydrophilic Zwitterionic Polymer Coatings

Presented by

Prof. Richard B. Kaner

Distinguished Professor of Chemistry
Distinguished Professor of Materials Science & Engineering
Dr. Myung Ki Hong Endowed Chair in Materials Innovation
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Date: Friday 3rd February 2023
Time: 3:00 pm – 4:00 pm (Sydney time)
Venue: Lecture Theatre 1 (J01, Room 201), Chemical Engineering Building
Also Via Zoom: 522 796 0108

Speaker Details: Richard Kaner received a Ph.D. from the University of Pennsylvania in 1984 working with Prof. Alan MacDiarmid (Nobel Laureate 2000, deceased). After postdoctoral research at Berkeley, he joined the Univerisity of California, Los Angeles (UCLA) in 1987, earned tenure in 1991, became a full professor in 1993, a Distinguished Professor in 2012 and was appointed to the Dr. Myung Ki Hong Endowed Chair in Materials Innovation in 2017. He has published over 450 papers in top peer reviewed journals and holds 70 U.S. patents. According to the most recent Clarivate Analytics/Thomson-Reuters rankings, he is among the world's most highly cited authors. Professor Kaner has received awards from the Dreyfus, Fulbright, Guggenheim, Packard and Sloan Foundations along with the Materials Research Society Medal, the Royal Society of Chemistry Centenary Prize, the Chemical Pioneer Award from the American Institute of Chemistry and the American Chemical Society's Buck-Whitney Research Award, Tolman Medal, Award in the Chemistry of Materials and the Award in Applied Polymer Science for his work on refractory materials including new synthetic routes to ceramics, intercalation compounds, superhard metals, graphene and conducting polymers. He has been elected a Fellow of the American Association for the Advancement of Science (AAAS), the American Chemical Society (ACS), the American Physical Society (APS), the European Academy of Sciences (EurASc), the European Academy of Sciences and Arts (Euro-Acad), the Materials Research Society (MRS) and the Royal Society of Chemistry (FRSC).

Seminar Details: Implantable medical devices often lead to nosocomial infections in US hospitals. The co-administration of antibiotics is typically used to reduce the amount of infection. However, antibiotic resistance and the proliferation of superbugs have motivated researchers to investigate antifouling polymers that resist adhesion of microorganisms and proteins. Unfortunately, the application of these polymers to the surfaces of medical devices often requires the use of pretreatment steps, exotic reaction vessels, and/or long reaction times that prohibit the widespread use of antifouling polymer modifications for implantable devices. We have developed a simple, one-step surface modification using an anti-fouling

zwitterionic polymer of several medically relevant materials.[1] Surfaces modified with the coating exhibit great antifouling properties towards proteins when compared to bare, unmodified surfaces. Furthermore, the modified surfaces resist the attachment and growth of several strains of bacteria and fungi, including superbug derivatives.

1. "A readily scalable, clinically demonstrated, antibiofouling zwitterionic surface treatment for implantable medical devices," Advanced Materials 34, 2270152 (2022).