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D.Y. Li

University of Alberta, Canada

Correlation between properties of nanostructured materials and their electron work function

Properties of materials are fundamentally dependent on their electron states that govern the atomic and molecular interactions, which affect various properties of materials. The electron behavior can be represented by the electron work function (EWF) to a large degree, which is the minimum energy required to move electrons at the Fermi level inside a conductive material to its surface. In this talk, the correlation between EWF and properties of nanostructured materials will be demonstrated and discussed with case studies, including surface nanocrystallization for minimized bacteria - implant material interactions, nano-crystallization for improved electrochemical and mechanical properties, and analysis of nanostructured photocatalytic materials. A simple approach will be introduced, which helps correlate EWF with many other properties in a straightforward way.

Biography

D.Y. Li is a Professor at department of Chemical & Materials Engineering and an adjunct Professor at the department of Biomedical Engineering, University of Alberta. His research interests include surface science and engineering, tribology and materials, computational materials science, photocatalysts, and bacteria-metal interfaces. Li has more than 250 publications including in excess of 200 refereed journal publications. Li is the editor-in-chief of the International Journal of Nano & Biomaterials and a member of editorial board for seven other journals in areas of materials, tribology, wear, and corrosion.

dongyang@ualberta.ca