

NANO WORLD SUMMIT: CURRENT AND FUTURE PERSPECTIVES

June 06-07, 2018 | Philadelphia, USA



Thomas J Webster

Northeastern University, USA

Two decades of commercializing nanomedicine: From medical devices to drug carriers to implantable sensors

There is an acute shortage of organs due to disease, trauma, congenital defects, and most importantly, age related maladies. The synthetic materials used in tissue engineering applications today are typically composed of millimeter or micron sized particles and/or fiber dimensions. Although human cells are on the micron scale, their individual components, e.g. proteins, are composed of nanometer features. By modifying only the nanofeatures on material surfaces without changing surface chemistry, it is possible to increase tissue growth of any human tissue by controlling the endogenous adsorption of adhesive proteins onto the material surface. In addition, our group has shown that these same nanofeatures and nano-modifications can reduce bacterial growth without using antibiotics, which may further accelerate the growth of antibiotic resistant microbes. Inflammation can also be decreased through the use of nanomaterials. Finally, nanomedicine has been shown to stimulate the growth and differentiation of stem cells, which may someday be used to treat incurable disorders, such as neural damage. This strategy also accelerates FDA approval and commercialization efforts since new chemistries are not proposed, rather chemistries already approved by the FDA with altered nanoscale features. This invited talk will highlight some of the advancements and emphasize current nanomaterials approved by the FDA for human implantation and discuss the future role of implantable sensors in preventing, diagnosing and treating disease.

Biography

Thomas J Webster has completed his BS in Chemical Engineering from the University of Pittsburgh (1995) and MS in Biomedical Engineering from RPI (1997) and PhD in the year of 2000. Currently, he is the Director of the Nanomedicine Laboratories. He has Supervised over 149 Visiting Faculty, Fellows, Post-doctoral, and thesis completing students. He is the Founding Editor-In-Chief of the *International Journal of Nanomedicine* (impact factor of 5.03) and directs or co-directs three international centers. He is a fellow of numerous societies, former President of the US Society for Biomaterials, and has started 11 companies with four FDA products.

th.webster@neu.edu

Notes: