

January Dinner Meeting
Tuesday, January 8, 2013
The Old Mill, "The Mill Room"
Toronto, Ontario

Topic: Tribology of Human Implants

Presenter: Professor John B Medley, PhD, PEng
University of Waterloo
Department of Mechanical and Mechatronics Engineering

Abstract

As humans age their mobility is impaired by the gradual (and sometimes not so gradual) deterioration of their joints. Fortunately, for us STLE members this is just a tribology problem and thus we have an inside track on the science and technology behind it. Of course, to credibly maintain this position, you must attend my presentation.

The development of biotribology will be explained along with some description of joint replacements of the hip, knee, cervical spinal disc, shoulder and elbow. An over-view of experimental and theoretical studies of these implants will be given. Then, some recent research on contact lens friction and tissue engineering of natural joint surfaces will be presented along with some description of the tribology behind the recent lawsuits related to the high failure rates of some metal-on-metal hip implants.

Bio

John Medley received his BAsC in 1974 and MASc in 1979, both from the University of Waterloo, and a PhD from the University of Leeds in 1982. All of his graduate degrees were in mechanical engineering but the topics were in the field of biotribology. Since 1982, he has been a faculty member in the Department of Mechanical and Mechatronics Engineering at the University of Waterloo conducting research mostly, but not exclusively, in orthopaedic biotribology. He has 137 publications including journal papers, conference papers, book chapters and technical reports. This included three best paper awards from organizations in the United States, the United Kingdom and Canada:

- Chan FW, Bobyn JD, Medley JB, Krygier JJ, Tanzer M (1999) Wear and lubrication of metal-on-metal hip implants. *Orthopaedics and Related Research*, 369, 10-24. [**1999 Otto Aufranc Award** from the Hip Society, Rosemont, IL, USA]
- Catelas I, Campbell P, Bobyn JD, Medley JB, Huk OL (2006) Wear particles from metal-on-metal total hip replacements: effects of implant design and implantation time. *Proc IMechE, Part H: Journal of Engineering in Medicine*, 220, 195-208. [2006 **Duncan Dowson Award** from the Institution of Mechanical Engineers, London, UK]
- Rashid M, Medley JB, Zhou Y (2011) Nugget formation and growth during resistance spot welding of aluminium alloy 5182. *Canadian Metallurgical Quarterly*, 50, 61-71. [2012 **MetSoc Best Paper Award** from the Metallurgy and Materials Society, Montreal, QC, Canada]

Meeting Times

Hospitality	5:00 - 5:30 pm
Dinner	5:30 - 6:45pm
Technical Presentation	6:45 pm

STLE Members & guests - we ask that you please pre-register with Ed Milanczak @ emilan@cogeco.ca.

You are still able to arrive at the door for the talk & lunch but seating cannot be guaranteed. You will be charged an additional \$5 for admission.