UNIVERSITY OF CALIFORNIA
UCMERCED

MESA (Mechatronics, Embedded Systems and Automation) Lab

Presents

A Research Seminar at The

Applied Fractional Calculus (AFC) Workshop Series

Date/Time/Place: 05/05/2014, 4-6PM, MESA Lab (Room 820), 4225 N. Hospital Rd., Atwater, CA 95301. T: 209-2284398

Title: Elucidating a "Best" Understanding of Biomolecule Dynamics with Stochastic Fractional Calculus

Abstract: Single particle tracking (SPT) experiments are used to elucidate a clearer picture of diffusion dynamics, conformational dynamics, and spatial organization of molecules within a cell. A fundamental understanding of cellular dynamic processes and spatial organization is essential for the development of therapeutics. Thus far, integer order stochastic modeling of SPT data has proven to elucidate a clearer picture of dynamic cellular processes. The aim of my research is to use superior fractional order stochastic models to provide an unprecedented understanding of the dynamic processes within a cell. An introductory talk will be given that covers the basics of the following topics: (1) cell biology, (2) cellular dynamic processes, (3) SPT experiments of biological molecules, and (4) how stochastic fractional calculus can be used to "best" model the SPT statistical data. Finally, a broad research plan will be given for the next several months.

Speaker Name / Contact: Tomas Oppenheim, toppenheim@ucmerced.edu

Speaker's short biography (with photo): I received my BSc (Magna Cum Laude) in Mechanical Engineering from Loyola Marymount University (2007) and a PhD in Materials Engineering from the University of Cambridge (2011). The focus of my PhD was on fabricating and characterizing biopolymer nanocomposites for biomedical applications. I am currently working as a Post-Doc at UC Merced with Professor YangQuang Chen to model single particle tracking data with stochastic fractional calculus.