

**ISEI 2012 – Puerto Rico.**

**Short Courses**

We have THREE exciting and varied short courses arranged for the ISEI 2012.

**Come learn from International Experts in their field.**

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**Title:** Nanodielectric material

**When:** Sunday, 10 June 2012 – 8:00 AM to noon

**Instructor:** Michel Fréchet, IREQ

**ABSTRACT:**

Notions on states of matter

Notions on solid materials

Basic comments on nanotechnologies

Introduction to nanometric scales

Implications linked to the nanometric dimensions

Introductory remarks on nanomaterials

Grain and boundaries: Dominance or interplay

Improvement or nano-effects: New properties

Dielectric and polymers

The concept of nanodielectrics

Degree of self-assembly and predominance of the polymer nanocomposites

State of knowledge with polymer nanocomposites

Some emerging pictures

What we do not know ...

Benefit for electrotechnical applications

Nanodielectrics having higher degree of self-assembly

**BIO:** Dr Michel Fréchet has a graduate background in physics. He joined Hydro-Québec's research institute (IREQ) in 1981. Since then, he has been involved in applied basic research in various fields related to electrical insulation and insulating materials. His major contributions concern discharge physics and dielectric phenomena. In recent years, he has devoted much effort to the emerging field of nanodielectrics and their applications. He can be reached at [frechett@ireq.ca](mailto:frechett@ireq.ca).



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**Title:** Introduction to Insulation Material

**When:** Sunday, 10 June 2012 – 8:00 AM to 5:00 PM

**Instructor:** Nancy Frost, Krempel

**ABSTRACT:** This course will focus on the fundamentals of insulation materials. Basics of insulation components in a motor/generator will be covered, along with material selection and testing. The short course will emphasize the insulation components for low to high voltage (600V to over 2300V) and up to high temperature ( $> 180^{\circ}\text{C}$ ) applications. An introduction to electricity at a basic and introductory level will be included. The main course will cover insulation materials and applications where they are utilized (motors, transformers and generators.) Finally, a review of major test methods and standards used in selecting and qualifying insulation systems will be given. This course is planned to be a six hours in length and lecture notes will be provided.

**WHO SHOULD ATTEND:** This course would appeal to both technical and non-technical personnel who require a fundamental working knowledge of electrical insulation materials and systems. This would include marketing and sales managers, including senior managers and product managers and other non-engineers who need to understand the basics of electrical insulation systems. Entry level engineers with limited experience in insulation materials would also be interested in this course.

**BIO:** Dr. Nancy Frost presently works for Krempel Insulation Technologies as the Vice President, Technical. She has experience in electrical insulation materials for low and high voltage systems. Nancy's education includes a B.S. in Chemistry and M.S. & PhD in Electrical Engineering. She has published technical papers in conferences regularly for more than the past decade and has given over 30 presentations on insulation materials. She is also very active in the IEEE Standards Working Groups, presently serving as the Chair of the Materials Subcommittee. She was the Chair of EIC 2011 and is active in the IEEE Dielectrics and Electrical Insulation Society.



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**Title:** Root Cause Failure of Power Transformers

**When:** Sunday, 10 June 2012 – 1:00 PM to 5:00 PM

**Instructor:** Ali Naderian, Kinetrics

**ABSTRACT:** Power transformers are usually known as reliable apparatus. Nevertheless, a major failure is possible at any age due to many factors as incorrect specification or operation, design or manufacturing errors, bad maintenance, excessive ageing, etc. Moreover, as a significant number of transformers in service are reaching or have already exceeded their expected end of life, several preventive scrapping are performed.

IEEE C57.125-1991 “IEEE Guide for Failure Investigation and Analysis for Power Transformers” is a related guide for such study which is used a reference of this short course. In this course common root cause of power transformer failures are presented. Furthermore, several diagnostics techniques that are used prior to dismantling the transformer such as DGA and FRA are reviewed. Post-mortem failure investigation methods such as DP are also discussed.

This short course includes review of 5 failure investigations with actual pictures of the failed units and details of root cause analysis of each case.

**BIO:** Ali Naderian received his B.Sc. and M.Sc. degrees from Sharif University of Technology in 1998 and the University of Tehran in 2000, respectively. During studies, his part-time employment experience included ISC (1997-1999) for design and testing of switchgears, and ITS (1999-2001) for designing and testing of power transformers and testing transformers. He was co-designer of a 3\*300kV cascade HV testing transformer. He compared commercially available RTV coatings for outdoor insulators in his PhD thesis during his research at the University of Waterloo (2003-2006).

He has been a project manager of high voltage testing at Kinectrics Inc (Formerly Ontario Hydro Research) since 2006 working on diagnostics of power transformers, high voltage cables, and outdoor insulators. He performs on-line and off-line PD measurements for HV apparatus. His research interests include partial discharge, dielectric frequency response, and frequency response analysis. He is a registered professional engineer in Ontario and a member of the IEEE Transformer Committee, an active member of IEEE Dielectric Frequency Response Task Force, IEEE PC57.152 Transformer Field Test Guide, and C57.125 Failure Analysis and Reporting Guide.



