



## Numerical Algorithms for Modeling Multi-Physics Phenomena in Biological and Engineering Systems

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Date: June 26, 2008 (Thursday)

Time: 2:00 - 3:00 p.m.

Venue: Room 603, Chow Yei Ching Building, HKU

Language: English

### Abstract

Prof. Cai will highlight the development of numerical algorithms in the following areas where multiscale physical phenomena pose much challenges in achieving computational efficiency.

- [1] Hybrid explicit/implicit solvation model for long range electrostatic interactions in protein folding;
- [2] Adaptive conservative cell average spectral element methods of Wigner equations for multi-physics models of electron transport in Nano-devices;
- [3] High frequency electromagnetic scattering in dispersive media in Phase shift Mask in nanoscale X-ray Lithography;
- [4] Modeling of contact and non-Newtonian fluid mechanics with random rough surface in Chemical Mechanical Polishing (CMP) in VLSI chip design.

### About the Speaker

Prof. Wei Cai obtained his Ph.D. from Brown University in 1989 in Applied Mathematics and became assistant professor at UNC Charlotte in 1989 and, then assistant professor and associate professor in UC Santa Barbara during 1994-1996. Currently, he is a full professor of Applied mathematics at UNC Charlotte. He is also appointed as professor at Fudan college of microelectronics and Beijing International Mathematics Institute at Peking University. He is 2005 winner of Feng Kang prize for scientific computing. His research is currently funded by DOE, NIH, ARO and NSF.

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