

**RYERSON UNIVERSITY
DEPARTMENT OF MATHEMATICS
BIOMATHEMATICS & FLUIDS SEMINAR**

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Date: Thursday, November 20, 2014

Time: 11:10am

Location: ENG 210

**Numerical Challenges of Chemotaxis-driven
PDEs**

Abstract:

From the first formulation of chemotaxis-driven partial differential equations (PDEs) by Keller and Segel in the 1970's up to the present, much effort has been invested in modeling complex chemotaxis related processes. It is already the sheer complexity of resulting PDEs that crucially limits the postulation of analytical results. In this context, the support by numerical tools are of utmost interest which renders the implementation of a numerically well elaborated solver an undoubtedly important task. This talk presents different Finite Element based iteration strategies (linear/nonlinear, decoupled/monolithic) for chemotaxis-driven PDEs. Besides studying the numerical efficiency for particular chemotaxis-driven PDEs, the need for numerical stabilization (here: with the flexible methodology of a scalar algebraic flux correction) is also demonstrated.

ALL FACULTY, STAFF, STUDENTS AND GUESTS ARE WELCOME TO ATTEND