

## Discrete Mathematics Seminar

Time: Friday, 15 November 2013, 1:00 – 2:00 PM

Location: 238 Derrick Hall

Title: Solver-friendly hybrid mixed finite element method

Speaker: Dr. Ja Eun Ku, Department of Mathematics, Oklahoma State University

### **Abstract:**

A new hybrid mixed finite element method to compute the flux variable accurately and efficiently will be introduced. The method is a two-step method, based on a system of first-order equations for second-order elliptic partial differential equations. On a coarse mesh, the primary variable is approximated by a standard Galerkin method. Then, on a fine mesh, an  $H(\text{div})$  projection is sought as an accurate approximation for the flux variable. The computation on a finer mesh can be carried out very efficiently using well developed preconditioners for the  $H(\text{div})$  projection. Also, it will be shown that the mesh size  $h$  for the finer mesh can be taken as a square of the coarse meshsize  $H$ . This is a joint work with Dr. Young Ju Lee and Dr. Dongwoo Sheen.