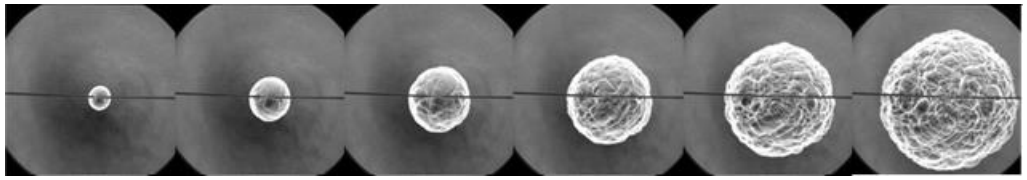
The Department of Mechanical and Materials Engineering

invites you to a research seminar entitled:

Investigation of turbulent expanding spherical flames



Dr. Nabiha Chaumeix CNRS-ICARE, Orléans, France

In the hypothetical case of a severe-accident in a nuclear reactor with core meltdown, the interaction of the hot core with the cooling water can generate large amounts of hydrogen. Hydrogen may be produced by the oxidation of some metals present in the corium pool or in the basement during the molten corium-concrete interaction phase. Since hydrogen/air mixtures exhibit a very low-ignition energy, the presence of hot surfaces in the vicinity of the flammable mixture may lead to the ignition of a slow flame that can accelerate during its propagation. This can lead to a fast-flame which can overload and potentially damage the reactor building. A better understanding of the phenomena that are responsible for this strong flame acceleration from the early flame formation stage is required. A recent benchmark (Bentaib et al. 2014 in Annals of Nuclear Energy) has shown the importance of the turbulent flame models used in the CFD codes used worldwide in the assessment of the explosion risk in nuclear power plants. It is with this motivation that a new experimental setup has been designed and built at CNRS-ICARE laboratory to investigate the effect of well-characterized turbulence intensity on the increase of the flame speed of hydrogen/air flames.

11am in McLaughlin Room 312 on Thursday, November 12, 2015