



## DoNuTS Technical Meeting

**Time:** 1600 Wednesday, 3 February 2010

**Place:** NE Conference Room, 1106 Etcheverry

**Speaker:** Brian Quiter, UCB Nuclear Engineering

**Subject:** Materials Assay Using Transmission NRF

Nuclear resonance fluorescence (NRF) has been identified as a potentially useful physics phenomenon for homeland security applications such as cargo screening. However, dose limitations and uncontrolled geometry have indicated the necessity to use a monoenergetic photon source to induce NRF. These constraints do not apply to many other unsolved problems, such as spent fuel assay. A LBNL/LANL/UCBNE collaboration has been considering potential uses of NRF in nuclear safeguards. This talk discusses modeling of NRF and a series of experimental NRF measurements of fuel-assembly mock-ups at the MIT HVRL. Differences between samples of 8.5g and 17g of  $^{238}\text{U}$  were observed in a 0.5 kg Pb/DU target.