



# CYCLOTRON INSTITUTE

## TEXAS A & M UNIVERSITY

### **A remarkable property of (some) thermoluminescent dosimeters: A single irradiation gives dose and beam quality information**

**Abstract:** After being exposed to ionizing radiation, thermoluminescent dosimeters (TLDs) are heated in order to release charges that were trapped in the material during the irradiation. The release of charges turns into visible light that is detected, and the total emitted light is proportional to the ionization induced by the exposure. This way, TLDs are used as dosimeters, i.e. tools that measure the energy absorbed in the material during irradiation.

Some TLDs, such as LiF:Ti,Mg and CaF<sub>2</sub>:Tm, show a remarkable property: the light integral is indeed proportional to the absorbed dose (as expected), but the temporal structure of the light emission gives independent information on the quality of the radiation field. We have studied this property of the mentioned TLDs, and its dependence on the radiation field ionization spatial density (or LET), from data obtained exposing TLDs to different fields, including ion beams from TAMU's Cyclotron.

We'll present recent results obtained with low-energy photon beams and the application of this property to medical dosimetry.

May 15, 2017

10:30am

## **50 Years of beam Seminar Series**

**Dr. María-Ester  
Brandan**

Physics Institute, National  
Autonomous University of  
Mexico (UNAM)  
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Cyclotron Institute  
Room 228

Refreshments will be served  
at 10:15am



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