

The Unit of Nuclear Engineering invites you to a

Special Workshop on

Gamma-ray Spectrometry

Recent advances in research, development, and applications

Ben-Gurion University of the Negev

Tuesday-Thursday, Feb. 20-22, 2018

The Marcus Family Campus, Building 90, class 323

Prof. Sheldon Landsberger

Nuclear and Radiation Engineering Program

The University of Texas at Austin

Texas, USA

Abstract

Research and development in Gamma-ray spectrometry have significantly increased in the past two decades. While there are several very good books and academic courses on general nuclear instrumentation, there are very few courses dedicated solely to gamma-ray spectrometry. The applications of gamma-ray spectrometry cover a wide range of areas including naturally occurring radioactive materials (NORM), radiation detection of residues from mining activities, homeland security, detector development, nuclear medicine, etc. A 3-days workshop including basic gamma-ray experiments, review of fundamentals of gamma-ray interactions, decay schemes, instrumentation and electronics, calibration, statistics, in-situ detectors, low-level gamma-ray counting detectors in nuclear medicine, and radiation on the Israel phosphate production will be covered.

Note: Participants will have the opportunity to briefly present their projects and receive professional comments and feedback. Two such 15-minutes presentations followed by 15 minutes discussion are planned for each day between 13:00-14:00.

Tentative schedule for each day:

09:00-10:20	Lecture I
10:20-10:40	Coffee break
10:40-12:00	Lecture II
12:00-13:00	Lunch break
13:00-14:00	Participants' lectures
14:00-15:00	Lecture III
15:00-15:20	Coffee break
15:20-16:30	Lecture IV

Participation is free of charge. For registration, please contact Dr. Erez Gilad via gilade@bgu.ac.il.

Gamma-Ray Spectrometry

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Tuesday-Thursday, Feb. 20-22, 2018, The Unit of Nuclear Engineering, BGU

Tuesday, Feb 20	Topics
09:00 -10:20	1. Why is Gamma Ray Spectrometry Important in Israel & Workshop Objectives 2. History of Gamma-Ray Spectrometry
10:20- 10:40	Coffee Break
10:40-12:00	3. Nucleus Isotopes and Decay Schemes 4. Gamma Ray Interactions and Shapes of Spectra
12:00-13:00	Lunch Break
13:00-14:00	5. Participants' lectures
14:00-15:00	6. Germanium Detectors I
15:00-15:20	Coffee Break
15:20-16:30	7. Germanium Detectors II 8. Gamma Ray Spectrometer Electronics

Wednesday, Feb 21	Topics
09:00 -10:20	9. Germanium Detector Efficiency and Coincidence Effects 10. Dead Time and Pile Up Corrections
10:20- 10:40	Coffee Break
10:40-12:00	11. Background Radiation and Shielding 12. Gamma-Ray Self Attenuation
12:00-13:00	Lunch Break
13:00-14:00	13. Participants' lectures
14:00-15:00	14. Uncertainty of Measurement
15:00-15:20	Coffee Break
15:20-16:30	15. Detection Limits 16. Radiation Protection in a Counting Lab

Thursday, Feb 22	Topics
09:00 -10:20	17. Natural Occurring Radioactive Material in Oil and Gas Exploration 18. Compton Suppression
10:20- 10:40	Coffee Break
10:40-12:00	19. Neutron Activation Analysis 20. Quality Assurance and Quality Control
12:00-13:00	Lunch Break
13:00-14:00	21. Participants' lectures
14:00-15:00	22. Laboratories for Students 23. Room Temperature Detectors
15:00-15:20	Coffee Break
15:20-16:30	24. In Situ Gamma-Ray Detection 25. Gamma-Gamma Coincidence 26. Workshop Evaluation