

Assistant Professor Position in the Department of Physics at the University of North Texas

The Department of Physics at the University of North Texas (UNT) seeks to fill a tenure-track faculty position at the assistant professor level. A Ph.D. in physics or a closely related field is required in addition to research experience beyond the Ph.D. The area of expertise sought is ion beam experiment. Preference will be given to applicants with an expertise in the development and application of keV to MeV ion beam techniques for the characterization and modification of materials. The ion beam group currently consists of five faculty members using a number of particle accelerator laboratories and associated equipment at UNT. In addition, the Department co-organizes the International conference on the Application of Accelerators in Research and Industry (CAARI), which is held in Ft. Worth, TX every even year.

The job responsibilities include establishing an independent research program that attracts external funding. The search committee will consider applications received through at least January 15th, 2009.

The Department of Physics values teaching at both the undergraduate and graduate level and currently has over twenty full-time faculty and two full-time lecturers. The department has over fifty graduate students, over 100 undergraduate majors, and serves over five thousand undergraduate students annually. One of Texas' largest universities, UNT offers 96 bachelor's, 111 master's and 50 doctoral degree programs. The Dallas–Fort Worth–Denton metroplex is home to a diverse population of high technologies that provide a broad collaborative base for research activities. Further information regarding the department may be obtained by visiting our website (www.phys.unt.edu) or by contacting the Chair of the Department. Interested individuals should send a letter of application, the names and contact information of three references, and Curriculum Vita, electronically, to **Dr. Chris Littler, Chair, Department of Physics, University of North Texas, 1155 Union Circle #311427, Denton, Texas 76203-5017**, e-mail: clittler@unt.edu, phone: 940-565-2630. All application materials will be held in the strictest confidence.

UNT is an Equal Opportunity/Affirmative Action institution committed to creating an ethnically and culturally diverse community through its hiring and educational programs, thereby creating a welcoming environment for everyone.

October 27, 2008

Dear colleagues,

The attached ad is for an Assistant Professor position in experimental ion beam physics in the Department of Physics at the University of North Texas (UNT), which we are attempting to fill by the fall of 2009. My purpose in sending you this email is to inform you of some of the research facilities and present research programs in the accelerator group at UNT, the Ion Beam Modification and Analysis Laboratory (IBMAL).

The Ion Beam Modification and Analysis Laboratory (IBMAL) at the University of North Texas (UNT) utilizes a number of techniques for the characterization and modification of materials. Presently available techniques include nuclear reaction analysis (NRA), hydrogen forward scattering (HFS), particle induced X-ray emission (PIXE), Rutherford backscattering spectrometry (RBS), ion channeling (IC), trace element accelerator mass spectrometry (TEAMS), heavy-ion microprobe analysis (HIMA), and sputter initiated resonance ionization spectroscopy (SIRIS). The IBMAL is also used for atomic and molecular physics collision experiments to study ion charge-state dependence of X-ray and Auger electron production, highly-charged molecular ions, x-ray cross sections, and ion-induced electron and photon emission.

The IBMAL houses four accelerators: a Texas Nuclear Model 9500, 200 kV, 10 mA Cockcroft-Walton; two 2.5 MV single-ended, High Voltage Engineering Corporation Model AK Van de Graaffs; and a National Electrostatics Corporation Model 9-SDH2 3 MV tandem pelletron:

1. The 200 kV Cockcroft-Walton accelerator is being used for surface analysis measurements of materials by Sputter Initiated Resonance Ionization Spectroscopy (SIRIS).
2. The 3 MV tandem accelerator, which is the workhorse of the laboratory, was purchased with an rf charge exchange ion source (alphatross) and a Cs sputter-type ion source (SNICS). A third, ultra-clean, microbeam, raster-scanning, depth-profiling, Cs-sputtering ion source has been constructed for the 3 MV accelerator for Trace Element Accelerator Mass Spectroscopy (TEAMS). TEAMS is used to determine impurities in materials at sub-parts-per-billion (ppb) by depth profiling techniques. The 3 MV tandem also has a separated doublet lens Melbourne type heavy-ion microprobe beam line with beam spot size of ~300 nm for single event upset and ion beam induced charge collection studies on integrated circuits, a beam line for broad-beam single event upsets studies, and a beam line for high-energy ion implantation. The ion sources of the 3 MV tandem are used extensively for low-energy (10-70 keV) ion implantation.
3. One of the 2.5 MV Van de Graaff accelerators is used for routine PIXE, RBS, ion channeling, medium-energy ion implantation, and NRA. We are in the process of purchasing a second high-energy microprobe, which will be installed on the 2.5 MV Van de Graaff accelerator.
4. The other 2.5 MV Van de Graaff accelerator is being reconfigured to accelerate high-energy electrons.

The IBMAL has a broad assortment of x-ray, gamma-ray, charged-particle, neutron, and electron-detectors, pre-amplifiers, NIM electronics including linear amplifiers, fast signal amplifiers, current integrators, scalers and counters, signal pulse processors, time-to-pulse height converters, analog to digital

converters data acquisition and processing systems, oscilloscopes, power supplies, pulse generators, HV supplies, Delay line amplifiers, delays, etc. The IBMAL also has a class 1000 clean room, a Tencon Alpha-step surface profiler, a sample preparation evaporator, and a small machine shop. Figure 1 shows a picture of the main laboratory and the 3 MV tandem and one of the 2.5 MeV Van de Graaff accelerators.

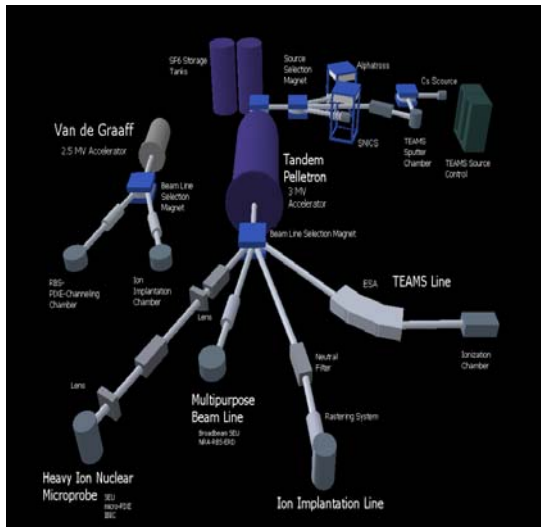


Figure 1 Main laboratory showing the 3 MV tandem and one of the 2.5 MeV Van de Graaff accelerators and the associated beam lines and experimental end stations.

At the present time, capital expenditures in the IBMAL total about \$7,500,000. Yearly maintenance and operating expenses are approximately \$100,000. Laboratory personnel, which includes five full time professors (Floyd Del McDaniel (mcdaniel@unt.edu), Jerry Duggan (jduggan@unt.edu), Sam Matteson (matteson@unt.edu), Duncan Weathers (weathers@unt.edu), and Bibhu Rout (bibhu@unt.edu)), a number of adjunct and visiting professors, one-two post-doctoral research associates, industrial research associates, and 10 graduate student research assistants, and 6-8 undergraduates, total over 20 people.

The Cockcroft-Walton accelerator and one of the 2.5 MV Van de Graaff accelerators are presently located in a ~1400 f² laboratory while the 3 MV tandem and the other 2.5 MV Van de Graaff accelerators are located in a ~5000 f² laboratory. Essentially, the Accelerator Group occupies all the basement floor in the Physics building.

Please visit the IBMAL web page for further information: <http://www.phys.unt.edu/ibmal>.

Please contact one of the accelerator faculty listed above for more information. Please pass this information along to anyone that might be interested.

Thanks,
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