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Department of Physics
Office of the Chair

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Dear Physics Alumni,

The Physics Department faculty and staff invite you to our **Homecoming reception on Saturday, September 20**. Last year we had a joint reception with Chemistry and Biology. We are doing that again this year with both a reception and a lecture demonstrations show. The show is designed to be of interest to everyone including children**.** The lecture demonstrations will begin at 10 am on Saturday morning in room 126 of Winston Hall. The demonstrations will be followed at 10:30 by a reception in the lobby of Winston Hall.

As I mentioned in last year's newsletter, we have had a major change in the Department this year. Judy Swicegood retired in December as the Administrative Coordinator in Physics after 29 ½ years of service. Judy came to Wake Forest University and was hired both in the Physics and Chemistry Departments on June 24, 1984 as an Administrative Assistant and worked in Salem Hall. She worked in both departments until Physics moved into their new building, Olin Physical Lab, in December 1989. Judy was the first employee to move into Olin (on Dec. 1, 1989), before the faculty moved in during the Christmas holidays. In 2004, Judy's hard work and dedication was recognized by the university in awarding her the "Employee of the Year Award". ~~The Department held a very nice re~~ The Department held a very nice retirement dinner for Judy in late November, and she has visited the Department several times since and is happy with her new status and freedom in retirement.

Judy's replacement is Karen Logan. Karen was formerly a gift specialist in the Advancement Department at WFU where she worked for 2 ½ years. Before that she worked in office management for several local organizations. We are very happy to have Karen on our staff.

As in previous years some of our faculty and students have received awards and other important forms of recognition. In February 2014 Professor Timo Thonhauser received the WFU Award for Excellence in Research~~,~~. In December, 2013 Professor Oana Jurchescu and graduate student Peter Diemer received the 2013 WFU Innovation Award~~,~~. ~~and~~ In March 2014 graduate student Nicholas Lepley was awarded first place in the inaugural 3~~-0~~ minute thesis oral competition at the Fourteenth Annual Wake Forest University Graduate Student & Postdoc Research Day. We learned in January that Professor David Carroll ~~has been~~was named a Fellow of the American Physical Society and ~~he has also been~~in April he was awarded the Scott Family Faculty Fellowship for his excellence in scholarship and teaching. Also in April, Professor Samuel Cho has been awarded the Shively Family Faculty Fellowship for his research, teaching, and service. Some additional details on these and other activities and awards are given below.

The number of students in our Department remains high. This fall we will have 18 juniors, 40 seniors, and 39 graduate students. Our tradition of undergraduate research also continues. Last year at least 30 undergraduate students engaged in research with our faculty. If you look around Olin, you will see

posters and publications in our halls bearing the names of both our undergraduate and graduate students. You can also read about some of the students and their research projects at http://www.wfu.edu/physics/profiles/profiles.html

It is a significant honor to be named a Fellow of the American Physical Society (APS) and it signifies the recognition of one's professional peers. Professor David Carroll is the second WFU faculty member to achieve this distinction. Emeritus Professor Howard Shields was the first**.** ~~**[Keith: I've heard this but have not verified that it is correct.]**~~ Professor Carroll was nominated by the APS Division of Materials Physics for pioneering studies in determining the electronic structure of nanoscale materials and their defects and interfaces through the use of scanning probes leading to applications in electroactive polymer nanocomposites.

The University's Excellence in Research Award which Professor~~.~~ Timo Thonhauser won this year is given annually to one or two faculty members who are assistant or associate professors and who have been at Wake Forest~~here~~ for no more than 10 years. He has inspired and mentored countless students since coming to Wake Forest in 2008, and is currently guiding a group consisting of five undergraduate students, four graduate students, and a postdoctoral research associate. They are working to solve problems related to carbon capture and hydrogen storage, which are of tremendous importance for a sustainable energy future. Timo has also won over $1,000,000 in external support since coming to Wake Forest.

Graduate student Peter Diemer and Prof. Oana Jurchescu received the Wake Forest Innovation award in December 2013 for their work on organic thin-film transistors. These electronic devices are the fundamental building blocks for new applications such as flexible and rollable displays, wearable electronics, electronic paper, smart bandages, disposable sensors, etc. The Wake Forest team ~~has~~ developed a method to enhance the performance of these transistors, and obtained record-high numbers for the figures of merit characteristic to such devices. Their method relies on vibrating the substrate during film crystallization: the mechanical energy provided to the system in this manner encourages the organic semiconductor molecules to reach the structural configuration corresponding to the global energy minimum, thus greatly reducing the density of defects. The technique exploits a key competitive technological advantage - solution processability. It is inexpensive and is compatible with substrates of any size and type. The work was published in Advanced Materials (25, 6956, 2013), highlighted in Nature (502, 9, 2013), Nature Materials (12, 946, 2013), on the cover of Advanced Materials, and resulted in a filed US patent application (PCT/US2013/61463).

One of the ways WFU gives recognition to faculty members is through named faculty fellowship awards. The awards are for outstanding teaching and research. They last for a period of three years. As mentioned above, Professor David Carroll has received the Scott Family Faculty Fellowship and Professor Sam Cho has received the Shively Family Faculty Fellowship.

This summer (June 2014) ~~G~~graduate student Ryan Godwin ~~has been~~was awarded a National Institute of Health (NIH) NRSA predoctoral fellowship in the Structural and Computational Biophysics Program. The NIH training grant is a National Research Service Award for predoctoral research training in specific shortage areas and will provide up to two years of support. The goal of the training program is to bridge the gap between the biomedical sciences and the more quantitative basic sciences, such as physics, chemistry, and mathematics. Ryan works with Professor Fred Salsbury.

At the Physics Department's annual awards ceremony last April Professor Daniel Kim-Shapiro ~~received the~~received the Physics Department Excellence in Teaching Award. Graduate student Gregory Smith won the Outstanding Teaching Assistant award, graduate student Katelyn Goetz won the Outstanding Peer Mentor award, and seniors Margaret (Maggie) Payne and Madison Marvel both received the Speas award. ~~Margaret~~ Maggie is attending UC Berkeley this fall to begin her PhD studies in Electrical Engineering ~~has been accepted into the graduate program in ??? at the University of California, Berkeley and~~and Madison ~~?~~began her studies in medical school at Southern Illinois University in July.

Graduate student Andrea Belanger won a poster presentation award for excellent research presented at the Nitric Oxide - Nitrite/Nitrate Conference in Cleveland, OH in June, 2014. Andrea's poster was titled "Effects of SNP on deoxygenated-induced RBC dehydration in sRBC". The conference was a joint meeting of the 8th International Conference on the Biology, Chemistry and Therapeutic Application of Nitric Oxide and the 6th International Meeting on the Role of Nitrite and Nitrate in Physiology, Pathophysiology, and Therapeutics. Andrea works with Professor Daniel Kim-Shapiro.

A new 3-minute oral thesis competition was added to the Fourteenth Annual Wake Forest University Graduate Student & Postdoc Research Day program. The Reynolda Campus winner was physics graduate student Nicholas Lepley. He is performing computer simulations of advanced Li-ion battery materials under the direction of Professor Natalie Holzwarth. You can view the video of his talk at https://www.youtube.com/watch?v=xXxzBAtUL9o .

The work of Professor Samuel Cho and senior Jessica Leuchter on protein formation was written up in the Wake Forest News, http://news.wfu.edu/2014/02/28/the-birds-and-the-bees-of-proteins/. They performed molecular dynamics (MD) simulations of protein-RNA complexes called aminoacyl-tRNA synthetases using our DEAC Supercomputing facilities. Jessica was invited to present her results at the 552nd WE-Heraeus Seminar at the Karlsruhe Institute of Technologie (Germany). Jessica was the first author on a peer-reviewed review article on MD simulations that was published in the Israel Journal of Chemistry's special issue commemorating the 2013 Nobel Prize in Chemistry. Currently, she is performing research at the Weizmann ~~Insitute~~Institute of Science (Israel), where she was accepted into a research program at the Kupcinet-Getz International Science School. Afterwards, her plans are to attend an MD/Ph.D. program.

I want to give special thanks to all of you who designated the Physics Endowment Fund as part of your alumni giving. As well as helping to send students doing research to national and international conferences, the Physics Endowment Fund is used to support other aspects of student research and scholarship. It also supports the annual faculty and student awards and allows us to provide lunches at the career advising events for our undergraduate and graduate students. The Fund is also used to support the students who are members of our local chapter of the Society of Physics Students in their activities and events throughout the academic year. The members of the Physics Department and the university community greatly appreciate the support of our alumni.

Please come and join the fun if you can. We are looking forward to seeing you. If you can't make it to Homecoming, please drop me a note or give me a call and tell me what you're up to. If this letter was forwarded to you, please let us know your current address.

Best Regards,

Keith Bonin
Professor of Physics & Chair