

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Physics
Laboratory for Fluorescence Dynamics
184 Loomis Laboratory of Physics
1110 West Green Street
Urbana, IL 61801-3080

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Biocomplexity Faculty Search Committee
c/o Prof. Rob de Ruyter van Steveninck
Biocomplexity Institute
Indiana University
Swain Hall West 117
Bloomington, IN 47405-7105

Dear Search Committee:

SUBJECT: Recommendation of Dr. Osman Akcikir

Dr. Akcikir worked in my group at the Laboratory for Fluorescence Dynamics (LFD) for about five years. He graduated with a doctoral degree in physics in December 2001. As you may know, the LFD has been established as the leading center for research, development, applications, and dissemination of fluorescence methodologies. The LFD provides the biological and medical research community with continuous access to state-of-the-art fluorescence instrumentation, provides training to students and other scientists on the principles and applications of fluorescence methods to biological problems, disseminates the results of our research to the biophysical and biomedical communities, conducts a strong core development program (in-house and with outside collaborators), and facilitates technology transfer in fluorescence instrumentation and related hardware to academic and industrial organizations. The LFD's development, education, service, and technology transfer has an impact on the local environment in Urbana, as well as on the national and international levels.

Dr. Akcikir's graduate research thesis dealt with the characterization of silicon nanoparticles using a series of spectroscopic techniques, mainly based on fluctuation correlation spectroscopy (FCS). Osman realized that FCS could offer substantial advantages over other methods when most of the properties of the particles under investigations are unknown. He also started to study the fluorescence properties of amorphous silicon using multiphoton excitation. Soon, he realized that FCS studies of suspension of particles could provide direct information on the size and brightness of the particles. He obtained the first demonstration that the size of these particles is in the nanometer range and that the particles are very bright. He developed new methodologies to analyze how homogeneous is the population of particles obtained by different preparation methods and studied the photo stability of the silicon nanoparticles. His published results pioneered in this area.

While he was a graduate student with me, Mr. Akcakir participated in the construction of several of our multiphoton systems. He assembled and performed experiments both with FCS instrumentation and with the two-photon laser-scanning microscope. Mr. Akcakir is a very careful experimentalist. He likes to go in-depth into the theoretical-physical aspects of the experiments. He is very capable in experimental methods and data analysis as well. During the last year of his thesis work, he came out with some new ideas about the characterization of the silicon nanoparticles. He constructed a low temperature cell to determine the spectroscopic properties at low temperature. He also assembled a system based on time-delayed coincidence to measure the anti-bunching effect in the silicon nanoparticles. He showed independent thinking and vision of where the field is moving and of what is the next important step.

Presently, Dr. Akcakir is a postdoctoral research fellow at the University of Michigan. There, he has built a single molecule microscope with time-resolved confocal and wide-field CCD imaging capabilities and, among other things, he is studying single-molecule traces of immobilized proteins undergoing folding-unfolding transitions. Dr. Akcakir is a very skilled experimentalist. He has an excellent background in physics, but he also has a strong interest in biophysics. Although his thesis work was on the spectroscopic properties of the silicon nanoparticles, he has participated in many other studies that were more biological. His interest on the nanoparticles was for their use in biological applications.

Dr. Akcakir has a very pleasant character. He is soft-spoken and very considerate. He interacts very well with everyone, and he is always cheerful and ready to help others. I am confident of his abilities and I strongly recommend Dr. Akcakir to you.

Sincerely,



Enrico Gratton
Professor of Physics and Biophysics
and Principal Investigator
Laboratory for Fluorescence Dynamics