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January 22, 2004

Rob de Ruyter van Steveninck
Chair, Biocomplexity Search Committee
Department of Physics
Indiana University
Swain West 165
Bloomington, IN 47405-7105

Dear Rob,

I am writing to you on behalf of Byung-Il Kim, who is applying for a position in your Department of Physics. Byung has been working for me during the past two years as a post-doc in the Biomolecular Materials and Interfaces Department at Sandia National Laboratories. Byung's assignment has exposed him to a range of topics in both bio-physics and physics of nano-scale materials. His specific assignment has been to use a scanning probe system called the interfacial force microscope (IFM) to study surface interactions involving both active and passive self-assembled monolayers (SAMS). He has examined a wide range of interfacial interactions, including electrical double layer forces, hydration forces, and steric stabilization. His research in our group will result in four publications, the first of which has already been published (Science, July 17). The publications involve investigations of polymer films that can be thermally-programmed to grab and release proteins, spiropyran films that can be reversibly switched by light to change the charge and dielectric properties of a surface (accepted by Nanoletters), and the degradation of SAMS that are used to inhibit friction and stiction in micromachines.

Byung's primary research interests involve understanding how surface modifications influence interfacial properties. Byung's major strength is his expertise in electronics and scanning probe systems. The IFM is a complex instrument that is not easy to use. It took my previous post-doc almost a year and a half to set up the equipment and learn how to use it. Byung became familiar with the hardware and software in just a few months, and has demonstrated great proficiency in operating the device. He has collected an enormous amount of data during his time here. He is a hard working individual who is careful and meticulous in everything that he does. We have been very pleased with both the quantity and quality of Byung's research. Byung is familiar with other scanning probe systems, including the atomic force microscope and custom-built scanning tunneling microscopes. He has experience in a wide range of other surface science characterization methods, particularly high vacuum techniques such as XPS. He also has experience in the production of thin films using vapor deposition techniques, although I think that his background in surface characterization is much more extensive. He should be able to make significant contributions to your Department if you are interested in materials physics, surface characterization, scanning probes, advanced instrumentation, and/or nanoscience.

If Byung has a deficiency, it is that with his Korean background, his communication skills are not as good as those of my American post-docs. While his research results have appeared in quality journals such as Science, I recommend that he be provided with editorial help for technical writing. To determine whether his verbal skills are adequate for your needs, I recommend that you speak with him in person or on the telephone. I hope you give him a good look, and understand that his English skills are improving at a rapid pace. Please feel free to call me if you would like more feedback regarding Byung. I wish you well with your search.

Sincerely,

Bruce C. Bunker

Bruce C. Bunker
Distinguished Member of the Technical Staff
Biomaterials and Interfaces