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Prof. Rob de Ruyter van Steveninck
Biocomplexity Institute
Indiana University
Swain Hall West 117,
Bloomington
IN 47405-7105

Dear Professor de Ruyter van Steveninck,

This is a letter to recommend Dr. Florin Despa for a position as a theorist in your Institute. He was born and grew up in Romania, where he received his schooling and all his professional training through his Ph.D. He then went to Leuven as a postdoctoral, in the Laboratorium voor Vaste-Stoffysica en Magnetisme (Laboratory of Condensed Matter and Magnetism). He came from there to join my group at The University of Chicago, where he spent three very productive years. He has now joined the research group of Dr. Raphael Lee, at The University of Chicago, where he is leading the theoretical effort in Dr. Lee's studies of membrane especially the fundamental physics and chemistry of their repair and regrowth.

As you will see from his Curriculum Vitae, he has worked in a variety of areas, including transport and diffusion, nucleation and spinodal decomposition, EXAFS scattering, and clusters and nanoscale systems. With me, he has been extremely active in studying kinetics of "unimolecular" reactions of clusters from several points of view. He has been particularly interested in large-scale rearrangements of complex systems such as clusters and biomolecules; we have several publications together now, and more in press.

The work he has been doing recently is very likely to be very important for understanding the behavior of proteins. Specifically, he is now completing a project, or perhaps should say the first stage of a long-term project, to elucidate how water molecules adjacent to proteins behave differently from water molecules in a homogeneous medium. This study demonstrates how the restriction of the water-free region reduces the high-frequency response the water molecules, and to a propensity of these molecules to correlate and "lock in" to one another. The picture that emerges is quite different from the naïve ice-like model that has sometimes been invoked, but has some of the characteristics inherent in that model. One aspect of the work that we hope will make it interesting to the chemistry community is its implications and predictions of experimental tests of the concept.

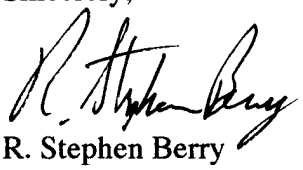
Another of his most recent achievements will appear soon in a paper in the Journal

of Chemical Physics. This paper shows quantitatively how a reaction path with a transient intermediate, a locally-stable form along the path, competes with a direct path with no locally-st intermediate. This is an important step in our overall effort to understand the differences betwee the simple, one-path reactions that chemists learn about as undergraduates and the realis complex, multistep and multi-path reactions that real complex systems undergo.

Both of these results are elegant display of Despa's creativity. While I have contributed to the work on water as it progressed, the basic idea was Despa's, and he has done t background work to learn all the tools and methods he needed to turn a notion about this subject into a solvable scientific problem. It is just the kind of event that gives one confidence that a yo scientist is on the kind of trajectory we would like for our best students and associates.

I urge you to invite Despa to visit and show you what he has been doing. I think you would find this vigorous, lively young theorist an outstanding candidate for a faculty positior Indiana University.

Sincerely,



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