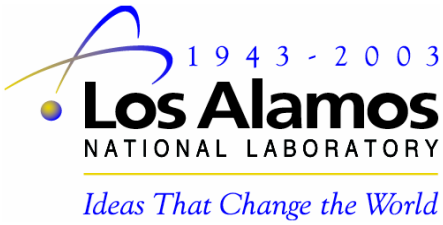

Alan J. Hurd, Director
Lujan Neutron Scattering Center at LANSCE
Mail Stop H805
Los Alamos, New Mexico 87545 USA
Ph. (505) 665-0630 Fax: (505) 665-2676
E-mail: ajhurd@lanl.gov

Date: January 4, 2003
Refer to: LANSCE-1/04-01

Biocomplexity Faculty Search Committee
c/o Prof. Rob de Ruyter
Department of Physics
Indiana University
727 East Third Street, Swain West 117
Bloomington, IN 47405-7105

Re: Recommendation for Dr. Leo Silbert as Faculty Candidate

Dear Prof. De Ruyter,

It is my great pleasure to give you my highest recommendation for Dr. Leonardo E. Silbert for the opening on your faculty at Indiana University. Leo is a talented computational physicist who would fit in well with other faculty in the Department of Physics.

I have known Leo Silbert since 1998, when he interviewed for a postdoctoral position at Sandia National Laboratories in New Mexico; I hired him in February 1999 to work with Gary Grest. Leo came highly recommended from Robin Ball, John Melrose and Sam Edwards, the faculty involved in his thesis work at Cambridge. My relationship to Leo was as collaborator in granular media problems, line manager, and program manager responsible for his funding and research direction at Sandia. Although I left Sandia in 2001 to take my current position, I have kept in touch with Leo to follow his career.

Among Leo's greatest achievements in the last three years is the elucidation of the "phase diagram" for granular chute flow—the classic Bagnold problem. He used precise three-dimensional computational techniques to map out the flow conditions and scaling relationships as a function of chute inclination, granular bed height, and (recently) friction and restitution. Leo's contribution was as the center of a team involving researchers from Sandia, ExxonMobil, and the Technion. He developed and validated the code—an enormous task for which he relied efficiently on Steve Plimpton, a Sandia expert in massively parallel computations—then evaluated the results. Often he

generated conjectures that he then worked out with his collaborators, especially Grest and Dov Levine. This work has led to nearly a dozen publications and some surprising lessons in granular physics, such as the smooth evolution of packing geometry of hard spheres from isostatic—with coordination number of six—to hyperstatic—with coordination number approaching four—as the friction increases from zero.

The study of networks in granular systems—force networks, contact networks, and such—has recently led Leo to investigate biological networks. He is particularly interested in scale-free *neural* networks. This direction promises fruitful new discoveries upon which future programs can be built.

Leo Silbert has a strong background in low Reynolds number hydrodynamics as a consequence of his thesis work. He has one of the world's best codes and techniques for performing large, accurate simulations of colloidal flow. I believe this background will bring returns to his future research program.

While I cannot attest directly to Leo's teaching ability, I have heard him give numerous technical presentations from ten minutes to over one hour duration. In all instances I have found him to communicate well to all levels of listener. Above all, he is collegial and poised while being constructively argumentative.

In summary, I am excited to hear that Leo could be considered by Indiana University. He is very clever and will be a good catch, bringing many high caliber collaborators with him. If further information is needed, please feel free to contact me.

Sincerely,

Alan J. Hurd
Director
Lujan Neutron Scattering Center at LANSCE

Cy: LANSCE-12 file