

BIOENGINEERING

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Dec15,2002

Ms. Yana Teterina
Biocomplexity Faculty Search
Department of Physics
Indiana University
Swain West 117
727 East Third Street
Bloomington, Indiana 47405-7105

Re: Mehrdad Zarandi

Dear Ms. Teterina,

With the letter, I am responding to your request for a reference for Dr. Mehrdad Zarandi, whom you are considering for a faculty position in your department. I am pleased to provide a recommendation for him.

Dr. Zarandi was truly one of our brightest and most talented students. After obtaining his Masters Degree, he undertook a very challenging experimental project for his Ph.D. thesis under my supervision. After an initial discussion about the main objective of the project, Dr. Zarandi took a leadership role in the project. Within a short period of time he designed an elaborate computer controlled flow loop system while mastering the tools needed to conduct his research. These tools included sophisticated image processing techniques and learning about the hemodynamics of the human cardiovascular system and blood rheology. Mehrdad's research efforts resulted in the discovery of a new flow circulation pattern for curved vessels with important industrial and biological implications. He showed that the Dean's double vortex solution is super-sensitive to the flow boundary condition and almost insensitive to the time variation of the mean flow.

According to his findings, flows in curved vessels with constricting entrance sections almost always show a single rotation vortical structure with an elevated azimuthal wall shear stress level. By demonstrating that the Dean's vortex can

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rarely exist in practical flows, Dr. Zarandi has added a new chapter to the studies of flow in curved vessels.

Dr. Zarandi has a very pleasant personality and works well with his colleagues and professional staffs. Among his superb qualities are his excellent teaching talents. He has been the head TA for several courses in our department. Occasionally, I have asked him to teach in my regular classes. His lectures are always clear and somewhat entertaining. Regarding his ability to generate new ideas and establish an active research and teaching activities, I am sure that he is quite capable of embarking on new research challenges in the fields of biofluid mechanics and chemical engineering. His intellectual interests expand beyond his immediate academic research interests. His humble nature may be considered as a weakness in a professional environment, however, I always found him to show strength and an admirable professionalism when handling his other colleagues criticism of his work. I strongly recommend him for the position that he is applying for in your department.

Please do not hesitate to contact me if my further assistance in helping you to evaluate his qualifications arises.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Mory Gharib', with a long horizontal flourish extending to the right.

Mory Gharib
Professor of Aeronautics and
Bioengineering