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Trieste, 22-12-2004

Biocomplexity Faculty Search
c/o Theresa Dawson,
Department of Physics
Indiana University
Swain West 117
727 East 3rd Street
Bloomington, IN, 47405-7105-USA

Re: Recommendation letter for Doctor Lizhi Ouyang

As full Professor at the University of Trieste (Italy), I have been a witness to the abilities of many skilled scientists. During my 35-year career, I have been co-author of more than 270 publications in internationally read peer-reviewed journals. I frequently act as a peer-reviewer of the quality and validity of scientific publication submissions to many international chemistry journals , such as those of the American Chemical Society, Royal Society of Chemistry and of private scientific journals. In addition, I am frequently called upon to express my opinion on scientific projects (*ex ante* and *ex post*) as well as on scientists applying for academic positions all over the world. Therefore, I consider myself sufficiently qualified to offer a critical analysis of Dr. Ouyang's previous work, scientific qualities and future potential.

Through the past 4 years, I have been closely collaborating with the research group of Dr. Ching at the University of Missouri – Kansas City. Dr. Ouyang is a member of Dr. Ching's group and it is through this connection that I became familiar with Dr. Ouyang's quality research. Dr. Ouyang's significant and substantial improvements to a working solid-state physics technique have greatly enhanced the computational power at the disposal of the group. The newly modified methodology allows for detailed analysis of important biosystems previously beyond the reach of many interested groups. This work has shown that the electronic structure of complex bio-systems at the centre of countless healthcare issues can now be studied in exceptional detail.

In this context, I have been working with Dr. Ouyang on a study of the vitamin B_{12} family compounds, the cobalamins. Cyanocobalamin, commonly called vitamin B_{12}, and

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the strictly related cobalamins, methyl and adenosyl-cobalamin, are biomolecules of great importance. Dr. Ouyang has provided important insight into the nature of its bonding and electronic properties. This data will be useful to many scientists and has shown to the health care industry that they can now study selected systems at the quantum and electronic level. This is important because the exact nature of many molecules vital for good health is still poorly understood. The efforts of Dr. Ouyang have already made important contributions to condensed matter physics, which is closely related to chemistry and structural chemistry, and through that, to biochemistry.

It is not only because of this recent work, but also because of the great potential of Dr. Ouyang's future work that I strongly support him.

In act, the depth of knowledge and level of application Dr. Ouyang has shown is excellent. His dedication to research and scientific cleverness clearly places him among the most talented and hardest working scientists. Dr. Ouyang's research will surely have a profound impact on advancements in biotechnology and in modern materials research. First principles calculations of biomolecules such as vitamin B_{12} can provide the necessary insight to solve some of the complex health challenges facing us all today and in the future. Therefore, it is my honour to write a letter attesting to the professional and scientific capabilities of Dr. Ouyang as he continues with his outstanding research.

Scientists of his calibre are not commonly encountered.

Sincerely,

Lucio Randaccio

Director of the Department of Chemical Sciences