

Acceptance of the Mineralogical Society of America Award for 1977

JOHN G. LIOU

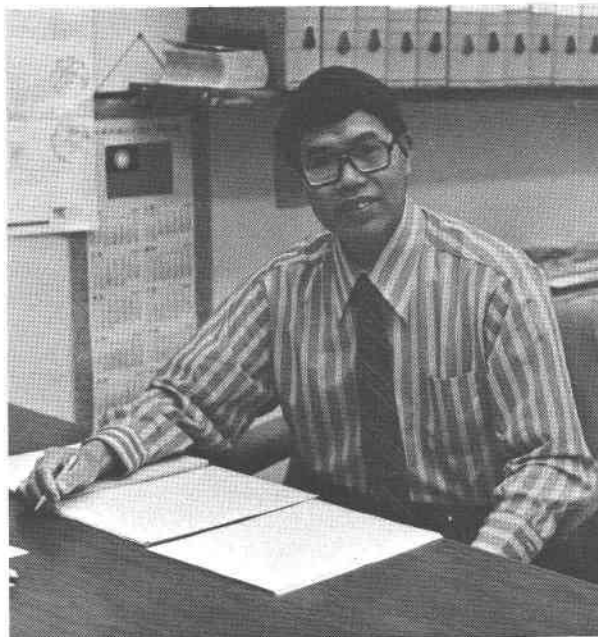
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Mr. President, Gary, Fellows, Members, and Guests of the Society:

This award is a great honor and I receive it with deep appreciation and humility. Last year at Denver when I was informed I was to be the next MSA Award recipient, I was stunned and shocked, and since then I have become nervous. I have great respect for all the previous recipients, including the one introducing me today, for their tremendous contributions to mineralogy and petrology, and never dreamed that I would be so lucky. Indeed, I feel very fortunate, for there are many other young candidates whose intellectual accomplishments outweigh my own and they are more deserving of such an honor.

I am most grateful to the Society and to my many former teachers, colleagues, and friends who have made this award possible. Most of all, I deeply appreciate my wife, Hsiu-Yin, whose love, encouragement and support have been the key to whatever accomplishments I have made so far.

As a child, I was taught this Chinese saying: "Only ask what should be done; never ask what is the reward." I have been following this philosophy since. I was very fortunate to be admitted into the best university in Taiwan, namely National Taiwan University, where my undergraduate geologic education was supplemented by two years of research under Prof. V. C. Juan. Under his guidance, my interests in petrology and zeolite mineralogy were initiated. However, my research on low-grade metamorphism began "in earnest" when I came to UCLA in 1965 to study under Gary Ernst. He has greatly influenced my research directions, and I am particularly happy and honored that the introduction is being made by him. It was Gary who taught me the basic principles of experimental phase equilibria, metamorphic petrology, and many other things including scientific writing. I could have had no better example to follow than a hard-working scientist like Gary. I still remember the many stimulating and profitable discussions we had early in the morning before many other students showed up in the lab. It was those informal sessions that helped solve many difficulties



in my low-temperature experiments. Reaction rates under low-temperature conditions are notoriously sluggish, as you know, and I learned from Gary the necessity of patience and hard work in overcoming experimental difficulties. At UCLA, I also benefited from guidance and discussions with Yotaro Seki, Wayne Dollase, Kenneth Watson, Lincoln Hollister, John Rosenfeld and Malcolm Rutherford and from association with fellow graduates including Lee Hsu, Bill Gustafson, Michel Semet and Shingi Kuniyoshi.

After receiving my Ph.D. in 1970, I went to NASA in Houston as a Postdoctorate Fellow with the hope that I might be able to study low-grade metamorphic processes on the lunar surface. Investigations of the returned Apollo 11 samples indicated that there is no water on the moon and therefore that zeolite facies metamorphism evidently has not taken place. Therefore, I was probably the only one at NASA during the Apollo Mission who did not get involved in the investigations of lunar samples. Although I missed a golden opportunity, I had the good fortune to use all

the hydrothermal apparatus at NASA to continue my study on low-grade metamorphic reactions. Of course, I learned the uses of various equipment and applied them to the mineral paragenesis of low-grade metamorphic rocks from Vancouver Island and from Taiwan. During my two-year period at NASA, it was a great pleasure to work with the many lunar petrologists and I appreciated their friendliness. I particularly want to thank Robin Brett, Arch Reid, Hiroshi Takeda, David McKay, Gary Lofgren, and Dick Williams for their encouragement and help.

When I came to Stanford in 1972, I immediately received wide exposure to well-studied field areas from my colleagues and students and I accepted the idea that integrated field and experimental approaches are necessary to solve many difficult geologic problems. For my field and petrological studies, I have profited tremendously from working with persons from several institutions—Bob Coleman, Ben Page, John Suppe, Gary Ernst, and my colleagues from Stanford. For my laboratory approach, I owe a great deal to Frank Tuttle, Dick Jahns, Bill Luth, and Phil Fenn, who set up and maintain the excellent Tuttle-Jahns Laboratory at Stanford. I have also had many rewarding experiences from association with petrologists and mineralogists such as Gordon Brown, Bob Compton, Frank Dickson, Bill Dickinson, and Konnie Krauskopf. In addition, I have been fortunate in having many outstanding graduate students including Bruce Taylor, Diane Moore, Peter Schiffman, Mary Keskinen, Lina Echeverria, Jeremy

Platt, Janet Bauder, Eric Layman, and Bob Morrell.

UCLA has contributed greatly to the foundation of my scientific growth, NASA sustained it, and Stanford has accelerated it. I give the credit to these fine institutions for the honor which I have received. To them and to the individuals mentioned above as well as many more not specifically named, I express my deepest appreciation.

My previous studies have focused on systems of simple composition, and their application to complex natural systems is, therefore, restricted. The study of low-temperature reactions by conventional closed-systems methods encounters severe difficulties because of sluggish reactions of silicate minerals at temperatures below about 400°C. We have recently found that reaction rates are greatly increased by using large-volume rocker vessels rotated throughout the vertical, which were designed by Frank Dickson. The use of this equipment for study of rock alteration, low-temperature metamorphism, and solution behavior has started only recently, and I hope to accelerate and extend such use.

Again, Mr. President, I humbly accept this award with many thanks to the Mineralogical Society of America. I believe that the honor which you have bestowed on me today will be the greatest possible incentive for my continuing research. In spite of what Gary has just said, I am a modest and humble person, and I do need support and encouragement from the Society. I thank you all!