

## **Che-Min Cheng to serve as Regents' Lecturer**

**May 10, 1984**

Dr. Che-Min Cheng, president of the Institute of Mechanics of the Chinese Academy of Science in Peking and one of the world's leading authorities on explosive mechanics, will serve as a Regents' Lecturer at the University of California, San Diego during the spring academic quarter.

Cheng, whose friends call him Jimmy, will deliver a series of technical lectures and one public lecture during his stay. The technical lectures are all scheduled for 4 p.m. in room 7104 of Urey Hall on the Revelle College campus. They are:

Monday, May 21 - "Mechanics of High Speed Deformation"

Tuesday, May 22 - "Gas Bursts in Coal Mines"

Tuesday, May 29 - "Stability Problems Associated With High Speed Deformation"

Monday, June 4 - "Application of Non-Local Theory of Continuum Mechanics to Fracture"

The public lecture is scheduled for 8 p.m. Tuesday, May 29 in the Garren Auditorium in the Basic Science Building at the School of Medicine. Cheng will talk on "Opening of China's West and The Use of Explosion Mechanics."

Cheng, born in Jinan, China, graduated from Tsinghua University in Peking in 1947. He came to the United States one year later to study at the California Institute of Technology and, while at Caltech, worked on earthquake engineering. After getting his Ph.D. in 1952, Cheng worked on problems of vibrations induced by flow in pipelines. He helped to solve the problem of vibration in the pumps of the Grand Coulee Dam on the Columbia River in Washington and made extensive contributions to the problems of designing structures to resist shocks.

After his return to China in 1955, Cheng taught at Tsinghua University before joining the Institute of Mathematics and, later, the Institute of Mechanics of the Chinese Academy of Science, the highest research institution in China. Unlike the American Academy, the Chinese Academy of Science does in-house research and operates its own university and graduate school.

According to Dr. Y. C. Fung, professor of applied mechanics and engineering sciences at UCSD, Cheng has been instrumental in developing the science of materials subjected to very rapid loading - for example, what occurs when a meteorite hits the earth.

"Under very rapid loading, materials do not behave as they normally do," Fung said. "For example, steel may flow like a fluid or rocks may become ductile. Understanding this behavior and knowing how to control the process has important applications, especially for a country with the size and population of China. It is easy to understand why explosive mechanics assumes an unusual importance in the future development of China," he said.

"China's one billion population is crowded into the eastern half of the country while the western half, which is mountainous, is virtually empty," Fung said. "To develop the vast western half of the country there will be lots of

work building roads, railways, airports, channels, tunnels, dams and lakes; clearing the hills, forests and deserts; building the needed structures and developing the needed industry. To do this," he said, "the technology of using high explosives is recognized as convenient, economical and speedy. It supplies a form of mobile, concentrated energy to be used where it is needed. But, you have to understand the mechanics in detail in order to be able to use this energy efficiently and safely," he said.

According to Fung, China has accomplished a great deal in the development of explosive mechanics. A recent U.S. television program showed how Chinese engineers were able to destroy and remove a large hotel only a few yards from another building which was occupied and how they could loosen and remove a huge rock near a railroad track without interruption of the rail traffic.

"These feats require accurate knowledge and accurate control of the behavior of buildings and rocks subjected to explosive loading and this is the area of explosive mechanics that Dr. Cheng developed," Fung said. "His technical lectures will cover the experiments and mathematical analysis of these subjects and his public lecture will cover the general impact on society.

"Dr. Cheng speaks English perfectly," Fung said. "He is interested in all aspects of American life: schools, universities, society, economics and politics. He will have a great time this year watching our presidential election process."

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