

## IN MEMORIAM WILLIAM HSUN HU

On February 1<sup>st</sup> 1995 Professor Dr. Dr. h.c. William Hsun Hu died. He was one of the great promoters of the field of textures. He was foundation editor of this journal (under the name “Texture of Crystalline Solids”). Also he was essentially involved in the initiation of the first ICOTOM-Conference in 1968 (under the name “Textures in Research and Practice”) and subsequently he promoted all further ICOTOM-Conferences as a member of International Committee.

The work of Bill Hu during all his life can not be better characterized than by the title of this first conference – “Textures in Research and Practice”. As hardly any one else he combined these two aspects – Research and Practice – throughout all his work. His contributions to this field reach from the atomistic scale of materials science e.g. the subgrain coalescence model till to sturdy products like steels for car bumpers and armour plates.

Bill Hu worked on all classes of metals starting from *fcc* metals to which he was introduced by P.A. Beck as the supervisor of his Ph.D. Thesis. Then followed *bcc* metals mainly during his period at the Edgar C. Bain Laboratory of US Steel. And lateron also hexagonal metals such as titanium were included.

Bill Hu was one of the first who recognized that texture and microstructure, studied by diffraction methods and electron microscopy, are inseparably connected with each other, an idea which has found its recent culmination in the development of the Orientation Imaging Microscopy.

In his work, Hsun Hu payed attention to the three main processes of texture formation i.e. plastic deformation, recrystallization and lateron also phase transformation.



In his Ph.D. Thesis he embarked on the formation of rolling textures starting with *fcc* metals which was later on continued with other modes of deformation and metals of other structure types.

Detailed investigations were devoted to texture transition from the copper type to brass type as a consequence of stacking fault energy. This led to the Hu model based on slip by partial dislocations.

In order to understand the physical principles of texture formation by plastic deformation Hu studied single crystals in various orientations and deformed them by Channel-Die-Compression in order to have homogeneous deformation. On the other hand, he also extended his investigations to more technological deformation modes such as cross-rolling.

The second topic and probably his favorite one was texture formation by recrystallization. Bill Hu contributed essentially to all three main factors of that i.e. nucleation, boundary mobility, and the driving force due to the deformed substructure. As a result of this work it became clear that models of recrystallization texture formation must consider both oriented nucleation and oriented growth. Bill Hu was particularly fascinated by the cube texture and returned to it ever and ever again during his whole scientific career so that he was sometimes called "Mr. Cube Texture".

After his cubic-face-centered period followed the body-centered period into which he entered as a member of the Edgar C. Bain Laboratory of US Steel. Also with *bcc* metals he followed the same line starting with basic research on the physical mechanisms of plastic deformation and recrystallization and applying the results to technologically interesting products such as grain-oriented *Fe - Si* electric steels, deep drawing steels with increased yield strength and high  $\bar{r}$ -value, and high strength martensitic steels. He has many patents on that. When working on steels, phase transformation as a third texture forming process plays an essential role. Bill Hu studied also that problem e.g. texture transformation in *FeNi*-alloys after thermomechanical treatment.

Hsun Hu was born in Tientsin in China. He earned his Bachelor Degree in China. After that he left his home country in order to complete his education in USA. He stayed there and became American citizen. He was married to his wife Diane and they had one son Mason. Bill Hu was at home in two cultures, the Chinese and the American. As an internationally renowned scientist he attended numerous international conferences all over the world, many of them as an invited speaker. As a member of the International Committee of ICOTOM it was a great pleasure for him that ICOTOM-11 should take place in his native country China. With strong feelings he was looking forward to participating in this conference. Unfortunately this was not granted to him.

Bill Hu was a very warm-hearted and friendly person. All who had the privilege of meeting him feel very sorry about his too early passing away.

The texture community loses in William Hsun Hu one of their most prominent members. The present volume of the journal "Textures and Microstructures" is dedicated to him. The great number of contributions to it from colleagues from all over the world testifies the high esteem of the texture community for Bill Hu and his scientific work. We will keep him in everlasting memory.

H. J. Bunge