

Preface

This is the Proceedings of the Second International Symposium for Science on Form. The Symposium was held from October 19th through the 21st, 1988 at the University of Tsukuba. The subject of the Symposium was "3D Dynamic Morphometry for bridge between structure and function".

One of the mathematical methods used in morphometry is "stereology". Stereology has been developed to construct the 3D image of a structure from a 2D photograph of a cross section of the structure. A structure can be imaged in 3D from its electron micrograph of a thin section of material by the assistance of an electronic computer. The applicable conditions of stereology as well as its limitations have even been confirmed.

It is recently of great interest to investigate 3D dynamic morphometry based on its methods. In 3D dynamic morphometry, it is necessary to develop not only the mathematical methods but also the detection methods concerning its investigations. Newly developed methods including their problems were presented and discussed in the fields of confocal microscopy, X-ray, sonic, NMR microscopy and in dynamic simulation of granular systems. Concerning one of the detection methods, for example, part of the process of computer graphics to make real time microscopy is taken care of by an analog laser Fourier transformation during detection. NMR detection of local molecular interaction is taken care of by a simulation program of a molecular design to make images of the molecular structures.

We are pleased to have the opportunity to present many reports on 3D dynamic morphometry.

Concerning the arrangements, I would like to express my sincere thanks to the students of my laboratory as well to the coordinators who assisted me in organizing this symposium. I could not have accomplished the many tasks involved in the various aspects of arranging this Symposium without their assistance and encouragement.

Lastly, I would especially like to express my sincere thanks to Miss Setsu Sato who assisted me in organizing the Symposium as well as in publishing this edition of Proceedings.

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