Foreword

When the first international conference on commutative algebra and combinatorics was held in 1985 in Kyoto, the connections between combinatorics and commutative algebra were just becoming established. At this meeting I had the pleasure of meeting a recently graduated student of Professor Hideyuki Matsumura named Takayuki Hibi. One could not fail to admire the tremendous enthusiasm and energy which he displayed toward all aspects of mathematics, from his own research to the details of keeping the conference running smoothly. The conference turned out to be a tremendous success and opened up many doorways to future collaboration between western and Japanese mathematicians in the exciting new area of "combinatorics and commutative algebra." No one has been a more tireless exponent of promoting this field than Takayuki Hibi. In particular, in addition to his prolific and original research he has been the main organizer of two subsequent highly successful meetings in Japan on combinatorics and commutative algebra.

The present volume constitutes the proceedings of the second of these two meetings and confirms that the subject has lost none of its original vitality. New techniques such as toric varieties and Gröbner bases have greatly expanded the connections between combinatorics and commutative algebra. For instance, there is now a well-developed theory of the set of all triangulations of a set of points in Euclidean space that uses sophisticated recent developments in both commutative algebra and combinatorics. A further important development of the subject is the introduction of exterior algebra techniques, especially the theory of algebraic shifting pioneered by Gil Kalai. His contribution to the present volume should become the definitive overview of this theory. Just a glance through the titles of the papers contained here will show the extent to which commutative algebra has pervaded other areas of mathematics. Readers of all or part of these proceedings owe a debt of gratitude to Takayuki Hibi and his students Hidefumi Ohsugi and Tomonori Kitamura for bringing together a plethora of diverse experts in commutative algebra to Osaka and for arranging for so many of them to contribute high-quality articles to these proceedings. I look forward to many future beautiful results stimulated by the contents of this volume.

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