

Contents

Preface	v
Part I:	
Discretization of Surfaces: Special Classes and Parametrizations	1
Surfaces from Circles <i>by Alexander I. Bobenko</i>	3
Minimal Surfaces from Circle Patterns: Boundary Value Problems, Examples <i>by Ulrike Bücking</i>	37
Designing Cylinders with Constant Negative Curvature <i>by Ulrich Pinkall</i>	57
On the Integrability of Infinitesimal and Finite Deformations of Polyhedral Surfaces <i>by Wolfgang K. Schief, Alexander I. Bobenko and Tim Hoffmann</i>	67
Discrete Hashimoto Surfaces and a Doubly Discrete Smoke-Ring Flow <i>by Tim Hoffmann</i>	95
The Discrete Green's Function <i>by Yuri B. Suris</i>	117
Part II:	
Curvatures of Discrete Curves and Surfaces	135
Curves of Finite Total Curvature <i>by John M. Sullivan</i>	137
Convergence and Isotopy Type for Graphs of Finite Total Curvature <i>by Elizabeth Denne and John M. Sullivan</i>	163
Curvatures of Smooth and Discrete Surfaces <i>by John M. Sullivan</i>	175
Part III:	
Geometric Realizations of Combinatorial Surfaces	189
Polyhedral Surfaces of High Genus <i>by Günter M. Ziegler</i>	191
Necessary Conditions for Geometric Realizability of Simplicial Complexes <i>by Dagmar Timmreck</i>	215

Enumeration and Random Realization of Triangulated Surfaces <i>by Frank H. Lutz</i>	235
On Heuristic Methods for Finding Realizations of Surfaces <i>by Jürgen Bokowski</i>	255
Part IV:	
Geometry Processing and Modeling with Discrete Differential Geometry	261
What Can We Measure? <i>by Peter Schröder</i>	263
Convergence of the Cotangent Formula: An Overview <i>by Max Wardetzky</i>	275
Discrete Differential Forms for Computational Modeling <i>by Mathieu Desbrun, Eva Kanso and Yiyang Tong</i>	287
A Discrete Model of Thin Shells <i>by Eitan Grinspun</i>	325
Index	339