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Nota di contenuto	Preface -- Human Choice and Good Choice -- On 3D Scanning Technologies for Respiratory Mask Design -- Mathematical Modeling for Break Down of Dynamical Equilibrium in Bone Metabolism -- Why Do Hives Die? Using Mathematics to Solve the Problem of Honey Bee Colony Collapse. -- Zeta Function Associated with the Representation of the Braid Group -- Fast, Scalable, and Energy-efficient Parallel Breadth-first Search -- Basic Research for the Patient-specific Surgery Support System - an Identification Algorithm of the Mesentery Using 3D Medical Images- -- Using Process Algebra to Design Better Protocols -- Relational Hash -- Cryptography and Financial Industry -- Relaxation of an Energy Model for the Triangle-to-centered Rectangle Transformation -- Capillary Surfaces Modeling Liquid Drops on Wetting Phenomena -- Deformable Human Body Modeling from 3D Medical Image Scans -- The Mathematics Describing Two-Phase Geothermal Fluid Flows: Quantifying Industrial Applications and Innovations -- Leveraging Progress in Analytical Groundwater Infiltration for New Solutions in Industrial Metal Solidification.

This book is a collection of papers presented at the “Forum Math-for-Industry 2015” for which the unifying theme was “The Role and Importance of Mathematics in Innovation”, held at the Institute of Mathematics for Industry, Kyushu University, October 26–30, 2015. The theme highlights two key roles that mathematics plays in supporting innovation in science, technology, and daily life, namely, needs-based and idea-based. For the former, mathematics assists with sorting through the possibilities and putting matters on a more rigorous foundation, and for the latter, mathematical models of the possible implementations play a key role. The book gives excellent examples of how mathematics assists with stimulating innovation and, thereby, highlights the importance and relevance of the concept Mathematics\_FOR\_Industry. The contents of this volume address productive and successful interaction between industry and mathematicians, as well as the cross-fertilization and collaboration that result when mathematics is involved with the advancement of science and technology.

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