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Nota di contenuto	1. Introduction -- 2. The structures and cultures of the disciplines: the common chemical bond -- 3. Synthesis and manufacturing: creating and exploiting new substances and new transformations -- 4. Chemical and physical transformations of matter -- 5. Isolating, identifying, imaging, and measuring substances and structures -- 6. Chemical theory and computer modeling from computational chemistry to process systems engineering -- 7. The interface with biology and medicine -- 8. Materials design -- 9. Atmospheric and environmental chemistry -- 10. Energy: providing for the future -- 11. National and personal security -- 12. How to achieve these goals.
Sommario/riassunto	Chemistry and chemical engineering have changed significantly in the last decade. They have broadened their scope "into biology, nanotechnology, materials science, computation, and advanced methods of process systems engineering and control "so much that the

programs in most chemistry and chemical engineering departments now barely resemble the classical notion of chemistry. Beyond the Molecular Frontier brings together research, discovery, and invention across the entire spectrum of the chemical sciences "from fundamental, molecular-level chemistry to large-scale chemical processing technology. This reflects the way the field has evolved, the synergy at universities between research and education in chemistry and chemical engineering, and the way chemists and chemical engineers work together in industry. The astonishing developments in science and engineering during the 20th century have made it possible to dream of new goals that might previously have been considered unthinkable. This book identifies the key opportunities and challenges for the chemical sciences, from basic research to societal needs and from terrorism defense to environmental protection, and it looks at the ways in which chemists and chemical engineers can work together to contribute to an improved future.