

# Preface

Earth sustains an immense diversity of prokaryotic and eukaryotic organisms. Microorganisms play an essential role in the functioning and sustaining of all natural ecosystems including biogeochemical cycling of nutrients. Biotechnology has become an important tool for manipulating and utilizing microorganisms and plants and providing new approaches in various industries including petroleum, food, feed, pharmaceutical, detergent, and pulp and paper. New strains are continuously being explored and genetic or enzymatic functions are often reconstructed through molecular recombination and protein engineering techniques to increase the gene expression and metabolic productivity of industrially important organisms. The unique characteristics of these microbes are widely utilized for industrial applications such as enzymes and chemical production, waste treatment and recycling, bioremediation of industrial pollutants in soils and aquifers, enhanced petroleum oil recovery, biomining, and soil fertility. Biochemical and molecular tools are continuously being developed in an attempt to evaluate community structures with ecosystem functions and to develop appropriate industrial approaches.

This volume of the Soil Biology series, *Geomicrobiology and Biogeochemistry*, is a selection of topics related to biological processes with an emphasis on their industrial applications. It gives an overview of various aspects in geomicrobiology and biotechnology including topics such as biomining, bioremediation, biotechnological applications of some extremophiles, subsurface petroleum microbiology, enhanced oil recovery using microbes and their products, metal extraction, and soil nutrient cycling and plant nutrition.

Experts in the area of geomicrobiology and environmental sciences from diverse institutions worldwide have contributed to this book, which should prove to be useful to students, teachers, and researchers in the disciplines of soil and geological sciences, microbiology, environmental engineering, and biotechnology.

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