

Session 6

Environmental Biotechnology

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It is a challenge to encompass the varied subjects that deserve consideration under the heading of environmental biotechnology. Even a definition of environmental technology is difficult. The simplest approach is to define it as the use of biological technologies for sustaining or improving the environment. Bioremediation is practically synonymous with environmental biotechnology. Bioremediation deals with past contamination of the environment and the transformation of pollutants into benign substances. Environmental biotechnology has a future role for continued exploration of new, more easily degradable products and for manufacturing processes that prevent disposal problems. An understanding of ecosystems, thorough knowledge of biological pathways, and the means to measure biological activity are necessary to ensure success for cleaning up past problems and addressing future technologies.

Currently, the major focus of environmental biotechnology appears to be the development of bioremediation technologies. This observation is reflected in the compilation of papers in this section. Biological approaches to environmental clean-up are generally viewed in a positive light. Bioremediation is environmentally friendly and potentially less expensive than other remediation technologies. Bioremediation technologies appear to have a strong future because of the number of sites in need of clean-up and the favorable outlook for the bioremediation market.

A variety of bioremediation technologies are covered by the papers in this section. In addition, documentation of intrinsic bioremediation strategies and descriptions of bioreactor designs are provided. A common theme throughout the papers is the interaction of chemical, physical, and biological activities for pollution prevention, maintenance of the environment, and environmental remediation. These studies illustrate the means to harness, fine-tune, and improve reaction rates for biological destruction of contaminants.