

Current Status and Prospect of Industrial Biotechnology

Young-Hoon Park, Ph.D.

R&D Center for Bioproducts, CJ Corp., Seoul, Korea

Recently, the concept of industrial biotechnology is strongly emphasized and developed by many scientists, chemical companies, and governments as well, including US & EU. In technological point of view, this is not a new concept and mainly based on biocatalysis and fermentation, in combination with recent breakthroughs in the forefront of molecular genetics and metabolic engineering of industrial microorganisms. The importance of this concept is more emphasized by the worldwide trends of so-called "sustainable development". Industrial biotechnology has many possible advantages in terms of environment and its performance than conventional chemical technology does. The application of this technology can offer to produce a variety of bulk and specialty chemicals including food/feed additives, vitamins, bio-solvents, bio-colorants, bio-plastics, bio-pesticides and bio-fuels such as bio-ethanol and bio-diesel. All these can be produced from the biomass resources which are relatively abundant comparing to the fossil fuel resources. At present, it is estimated that the portion of biotechnological production processes in the chemical industry is about 5%, and is expected to increase up to 10~20% by 2010, depending on the consumption rate of crude oil, technology development, feedstock prices and policy framework. Many multinational chemical companies are therefore strongly interested in this new business area, since they believe it promises great return on investment. However, technological superiority is a *sine qua non* for the global competitiveness of the business.

The major issue in this area is therefore how to develop and secure such technological competitiveness. In this presentation, I would like to discuss the current status of industrial biotechnology, and possible business opportunities in the future.