
Preface

Enzymes and whole cells are able to catalyze the most complex chemical processes under the most benign experimental and environmental conditions. In this way, enzymes and cells could be excellent catalysts for a much more sustainable chemical industry. However, enzymes and cells have also some limitations for nonbiological applications: fine chemistry, food chemistry, analysis, therapeutics, and so on. Enzymes and cells may be unstable, difficult to handle under nonconventional conditions, poorly selective towards synthetic substrates, etc. From this point of view, the transformation, from the laboratory to the industry, of chemical processes catalyzed by enzymes and cells may be one of the most complex and exciting goals in biotechnology.

For most of the industrial applications, enzymes and cells have to be immobilized, via very simple and cost-effective protocols, in order to be reused for very long periods of time. From this point of view, immobilization, simplicity, and stabilization have to be strongly related concepts. For the last 30 years a number of protocols for immobilization of cells and enzymes have been reported in scientific literature. However, only very few protocols are simple enough and only very few protocols are useful enough to greatly improve the functional properties of enzymes and cells: activity, stability, selectivity, etc.

The third edition of *Immobilization of Enzymes and Cells* intends to be an update as well as a complement of the two previous editions. This volume now includes the following aspects of old and new protocols for immobilization:

1. Very simple protocols for immobilization of enzymes and cells which could be very useful for application at industrial scale.
2. Immobilization protocols useful to greatly improve functional properties of enzymes and cells.

There is still a long and exciting way to develop very simple and very efficient protocols for the preparation, characterization, and utilization of immobilized enzymes and cells. This volume tries to show some very interesting results already obtained and, at the same time, it intends to persuade to the readers for working in a further development of even more important protocols of immobilization. Very likely, the development of excellent protocols for immobilization will promote a massive implementation of enzyme and cells as industrial biocatalysts. This implementation could be decisive for the development of a much more skilled and sustainable chemical industry: the cost-effective production of very complex and useful molecules under the mildest conditions.

Madrid, Spain

Jose M. Guisan



<http://www.springer.com/978-1-62703-549-1>

Immobilization of Enzymes and Cells

Guisan, J.M. (Ed.)

2013, XI, 377 p. 116 illus., 39 illus. in color., Hardcover

ISBN: 978-1-62703-549-1

A product of Humana Press