

Bright Prospects

24 July 2006 | News



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Bioprocesses are widely used in several fields of commercial biotechnology and have applications in other areas too.

Biotechnology encompasses several disciplines. Genomics, proteomics and bioinformatics are some exciting terms. In fact biotechnology is colorful - "red" (medical and pharmaceutical), "green" (agricultural), "blue" (marine) and "white" (industrial and environmental applications). Bioprocess technology mainly comprises two parts-upstream and downstream processing. The upstream processing is mainly related to pre-fermentation steps and production (fermentation, biotransformation or enzymatic reaction). Downstream processing is carried out for isolation and purification of the product. Typically, 50-70 percent of the cost in classical processes is due to downstream processing. In fermentation that employs bioprocess technology, downstream processing can be as high as 80-90 percent. Thus, downstream processing has been identified as a major bottleneck in commercialization of bioprocesses.

Recognizing the need for a specialized course in bioprocess technology (BPT), the Department of Biotechnology supported an MTech program at the Institute of Chemical Technology (formerly UDCT, now ICT), Mumbai, in 1993. This program has special emphasis on downstream processing. The program is focused on creating a pool of expert human resource in the field of BPT, suitable for the growing Indian biotech industry. ICT was ranked among the top biotech schools in India in a survey conducted by BioSpectrum in January this year. The analysis of this survey reveals that excellent faculty, exemplary industry relations and outstanding employment track record are our strengths.

MTech. BPT course

M.Tech (BPT) is a multi-disciplinary four-semester course: two semesters course work and two semesters research project with emphasis on downstream processing. The total seats offered for this course is 30. Students with a Bachelor's degree in chemical engineering/pharmacy/chemical technology with GATE are eligible to apply. The selection is based on GATE and ICT written test and interviews.

Student's growth and prospects

Biotech is a very broad field and bioprocess technology is a small part of this gigantic field. Because of the design of the course, hard work put in by teachers and students and the need for such trained students in industry, the students are immediately absorbed by the industry. A study has shown that typically 63 percent of the students join the biotech industry and remaining go for higher studies.

What kind of jobs does the industry offer? A biotech industry has three basic sections: research and development (R&D), production and quality control (QC). Usually after an M.Tech in BPT, the students get absorbed in the R&D or production departments. A new emerging area is techno-marketing. It is not like the conventional marketing where one is expected to sell a product. Here there is transfer of technical knowledge or skills. For example, a company like Millipore needs a technically sound person who can go to various research institutes or industries to set up the machinery for certain processes and transfer the required operational knowledge to the concerned personnel in that institute/ industry.

Higher studies

Students who wish to pursue doctoral studies have an option of doing it from India or in some foreign countries. Many of our students are pursuing doctoral or post doctoral studies from renowned universities in America like University of Purdue, University of Rutgers, just to name a few. Besides this, some also join academic institutes as scientists/faculty.

The boom in the biotech industry is not any hypothetical word going around, but it is and can be felt by everyone.

By Prof. Smita Lele