

NYAWA 2014

the fermentor

Rosfarizan Mohamad
Norfarina Muhamad Nor
Foo Hooi Ling
Raha Abdul Rahim
Tan Wei Ling

The term fermentation can be used to describe any process involving the production of organic products by the mass culture of a microorganism (bacteria, yeast and fungi). Fermentation using recombinant microorganisms includes microorganisms carrying foreign products, which is referred as a product from recombinant DNA technology or genetically-engineered strain, i.e. recombinant strain (e.g., insulin, vaccines, interferon, human proteins, erythropoietin). The four groups of commercially important fermentation using normal microorganisms are; i) production of microbial cell (biomass), ii) production of microbial enzymes, iii) production of microbial metabolites, and iv) transformation processes - to modify a compound which is added to the fermentation (e.g., certain amino acids and fine chemicals). Fermentations can be carried out either as submerged (liquid medium) or solid state (solid or semi-solid medium) processes. More than 90% of industrial processes are carried out as submerged fermentation and the main industrial equipment required is a large scale aseptic fermentation vessel which is termed as the fermentor or bioreactor. The main function of a fermentor is to provide a controlled environment for the growth of a microorganism to obtain a desired product. A fermentor should be capable of being operated aseptically for a number of days and should be reliable in long-term operation. For aerobic fermentation, adequate aeration and agitation should be provided to meet the metabolic requirements of the microorganism. However, the mixing should not cause damage to the microorganism.

