

Bioprocess Engineering Shuler Solution

Substrate inhibition in bioreactors A Monod deviation, such as the Haldane (Andrew) equation, is more suitable for substrate inhibiting conditions. This is often confused with substrate limitation, which describes environments in which cell growth is limited due to of low substrate. Limited conditions can be modeled with the Monod equation; however, the Monod equation is no longer suitable in substrate inhibiting conditions. Note that the Haldane equation above Substrate inhibition in bioreactors occurs when the concentration of substrate (such as glucose, salts, or phenols) exceeds the optimal parameters and reduces the growth rate of the cells within the bioreactor. competitive substrate inhibition models respectively by Shuler and Michael in Bioprocess Engineering: Basic Concepts. These cell growth models are analogous to equations that describe enzyme kinetics, although, unlike enzyme kinetics parameters, cell growth parameters are generally empirically estimated b64fa259fe

MEOR is a multidisciplinary field incorporating, among others: geology, chemistry, microbiology, fluid mechanics, petroleum engineering, environmental engineering and chemical engineering. The microbial processes proceeding in MEOR can be classified according to the oil production problem in the field... b64fa259fe

Protein precipitation , Bioprocess Engineering: Basic Concepts (2nd Edition) Protein precipitation is widely used in downstream processing of biological products in order to concentrate proteins and purify them from various contaminants. The underlying mechanism of precipitation is to alter the solvation potential of the solvent, more specifically, by lowering the solubility of the solute by addition of a reagent. Oxford University Press. New York, NY 2003. For example, in the biotechnology industry protein precipitation is used to eliminate contaminants commonly contained in blood. Shuler et al. Bioseparations Science and Engineering b64fa259fe

Microbial enhanced oil recovery Kargi, Bioprocess Engineering: Basic Concepts. International Series in the Physical and Chemical Engineering Sciences. L. 8(1): p. 4-10 Shuler, M. The primary objective of MEOR is to improve the extraction of oil confined within porous media, while boosting economic benefits. As a tertiary oil extraction technology, MEOR enables the partial recovery of the commonly residual 2/3 of oil, effectively prolonging the operational lifespan of mature oil reservoirs. and F. 2001: Microbial Enhanced Oil Recovery (MEOR) is a biological-based technology involving the manipulation of functions or structures within microbial environments present in oil reservoirs b64fa259fe

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