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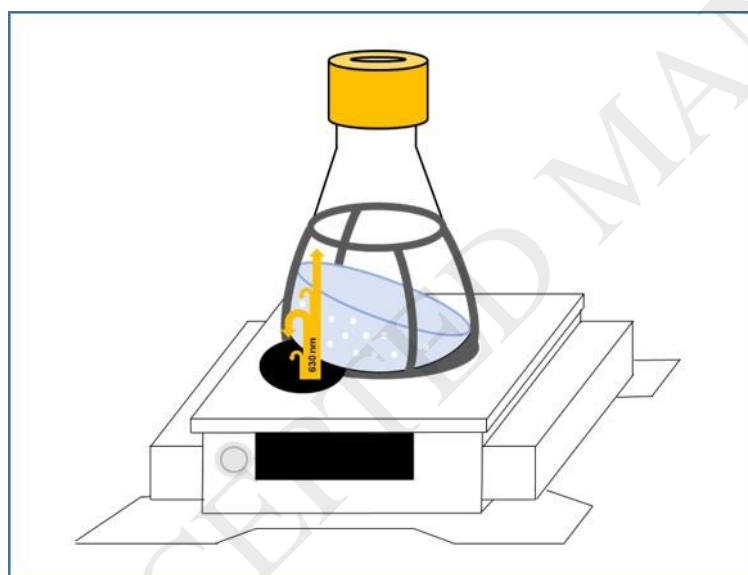
Characterization of a noninvasive on-line turbidity sensor in shake flasks for biomass measurements

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Graphical Abstract



Highlights:

- Effects of process variables on the on-line turbidity analysis in shake flasks
- Equation connecting process variables and the measured signal with the cell density
- Validation of the chemical model system derived equation with a biological system
- Implementation of a strategy for optimal measurement of resolution and stability

Abstract

Although shake flasks are most widely used for microbial cultivations, noninvasive on-line sensors for these systems are still limited compared to bioreactors. While pH and dissolved oxygen (DO) sensors for shake flasks exist since a couple of years, the cell density is still an

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