عنوان مقاله:

Computational Fluid Dynamics simulation of a single cell of shaken Microtiter plate for determination of Air/Water interface shape

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Behdad Pouran - *Department of Chemical Engineering, University of Tehran, Tehran, Iran Research Center for New Technologies in Life Science Engineering, University of Tehran, Tehran, Iran*

Ghassem Amoabediny - *Department of Chemical Engineering, Faculty of Engineering, University of Tehran, P.O. Box ۱۱۱۵۵-۴۵۶۳,Tehran, Iran Research Center for New Technologies in Life Science Engineering, University of Tehran, P.O. Box ۶۳۸۹۴- ۱۴۱۷۹, Tehran, Iran Department of Li*

Mohammad Sadegh Saghafinia - *Department of Chemical end Petroleum Engineering, Sharif University of Technology, Tehran, Iran*

Mahdi Pesaran Haji Abbas - *Department of Life Science Engineering, Faculty of New Technologies, University of Tehran . Research Center for New Technologies in Life Science Engineering, University of Tehran, Tehran, Iran*

خلاصه مقاله:

Shaken microtiter plates have recently attracted tremendous attraction in HTS (high-throughput screening) experiments. Detailed engineering analysis of such systems therefore is required to allow for precise estimation of oxygen transfer rate (OTR) followed by hydrodynamics. To accomplish, one may need to develop computational schemes which will help determine key engineering parameters i.e. shear stress distribution, velocity profile and interfacial area in smallscale bioreactors. CFD (computational fluid dynamics) techniques as an invaluable tool can foster scientists understanding of crucial parameters incorporated in miniaturized bioreactors. Consequently,Simulation efforts leads to comprehensive understanding of detailed fluid flow in orbital shaking vessels which are then compared in two different geometries at shaking frequency of 100 rpm.

کلمات کلیدی:

Orbital Shaking; Hydrodynamics; Microtiter plates; Computational fluid dynamics