

Stirred, Not Shaken; Mixing Myths in the Process Industries

Alvin W. Nienow

Consultant and Emeritus Professor of Biochemical Engineering, Birmingham, UK

Abstract

The field of mixing has advanced significantly in recent years, especially the ability to select impellers appropriate to certain mixing tasks, “Process result”. Yet much of this increased understanding does not seem to have reached many industrialists or academics. It is suggested that the failure to recognise these advances is related to much of the earlier and extensively published work, especially concepts associated with impeller ‘flow’ and ‘shear’. The latter is especially misleading in bioprocessing. This lecture will discuss these issues in some depth and briefly cover some other traditional mixing ‘beliefs’ that have now been superseded. The importance of these misconceptions to the bioprocess industries (bacterial and mycelial fermentations, animal cell culture, gene therapy production, protein formulation) will also be outlined.

keywords: impeller flow and ‘shear’, specific energy dissipation rate, mixing time, sub-surface feeding, baffles, drop breakage, bioprocessing.

Contact Author’s Information:

Name: Prof Alvin W Nienow

Address: Department of Chemical Engineering,
University of Birmingham,
Birmingham B15 2TT,
UK

Phone number: +44 121 440 2344

e-mail address: A.W.Nienow@bham.ac.uk

Presenting Author’s Information:

As above.

I wish this contribution to be considered for an oral presentation.

Do you anticipate submitting a full paper to the special Mixing issue of the Canadian Journal of Chemical Engineering? Yes