

Programme Course "Bioreactor Design and Operation" March 2010 Wageningen

Monday March 22: Ethanol production

Room C326

8.30 Registration

Introduction

9.00 Welcome, introduction (Prof. Dr. K. van 't Riet and Prof. Dr. G. Eggink)

Physiology and stoichiometry

9.30 Physiology as the basis for stoichiometry in Saccharomyces
Dr. R.A. Weusthuis, WUR

10.15 Break

Room PC625

Stoichiometry, costs and profits

10.30 Stoichiometry as the basis for cost calculations for anaerobic ethanol production
Prof. Dr. K. van 't Riet

11.15 Break

11.30 Case "Costs of ethanol production"

12.30 Lunch

13.30 Case "Costs of ethanol production"

15.00 To be announced, Enzymology and physiology of lignocellulosic substrates.

16.00 Case "Costs of ethanol production from lignocellulosic materials"

Hands on industrial examples

16.45 Fuel ethanol at industrial scale from lignocellulosic materials
Prof. Dr. J.A.M. de Bont, Nedalco

Tuesday March 23: Large scale specialties production

Physiology

Room C326

9.00 Aerobic physiology
Prof. Dr. G. Eggink

10.00 Break

Room PC717

Stoichiometry

10.30 Aerobic stoichiometry and kinetics.

Prof. Dr. K. van 't Riet

11.15 Break

11.30 Case "Rates ARA and stoichiometry"

12.30 Lunch

Reactor design

Room C106

13.30 Bird eyes view on aerobic reactor design and cost calculations
Dr. K. van 't Riet

14.15 Break

14.30 Mass transfer, Hold up and Heat transfer
Dr. K. van 't Riet

15.15 Break

15.45 Case "Reactor Design Arachidonic acid, Mass transfer"

Another reactor and substrate

16.45 Light, reactors and products
Prof. Dr. R.H. Wijffels, WUR

18 30 Course dinner

Wednesday March 24: Reactors and Products

Reactor design

Room C326

9.00 Intracellular accumulation of storage compounds
Prof. Dr. G. Eggink

10.00 Break

Room PC516

10.30 Mixing, Foam
Dr. K. van 't Riet

11.15 Break

11.30 Case "Reactor Design Arachidonic acid"

12.30 Lunch

Room C516

13.30 Medium Viscosity
Dr. K. van 't Riet

14.15 Break

Products and processes

14.30 Aerobic product formation
Prof. Dr. G. Eggink

15.15 Break

15.45 Anaerobic product formation
Dr. R.A. Weusthuis, WUR

Hands on industrial examples

16.45 Large scale production
Dr. H.J. Noorman, DSM

Thursday March 25: Vaccines and biologicals from cell cultures

Room PC516

9.00 Case “Arachidonic acid production and large profits”

10.00 Break

Room C326

10.30 Reactor design and operation, profit and global production

Dr. K. van ‘t Riet

11.15 Break

Cell cultures

11.30 Animal cell metabolism and stoichiometric medium design

Dr. D. Martens, WUR

12.30 Lunch

Room C106

13.30 Animal cell metabolism and stoichiometric medium design

Dr. D. Martens, WUR

14.15 Break

14.30 Approval procedures, costs and consequences

Prof. Dr. K. van ‘t Riet

15.15 Break

15.30 Shear

Dr. D. Martens, WUR

Hands on industrial examples

16.45 PerC6 cells as production unit

Dr. G. Zijlstra, DSM Biologics

Friday March 26: Your chosen product

Integration of stoichiometry and design, rate based design

Room C326

9.00	An example worked out Prof. Dr. J.J. Heijnen, TUDelft
10.30	Break
10.45	Continued
12.00	Discussion and evaluation
12.30	Lunch and closing