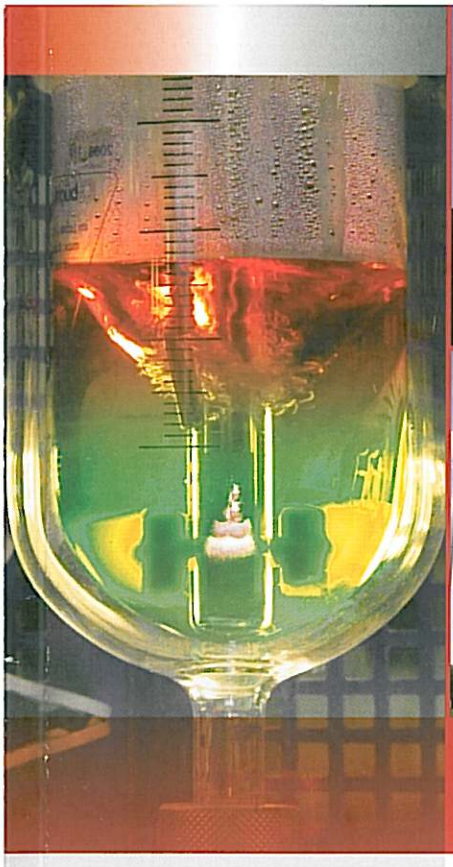

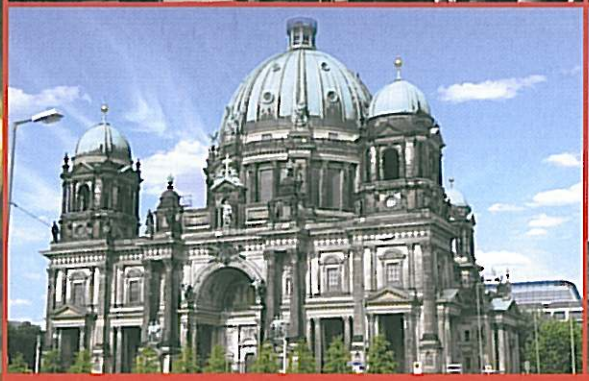

Berlinbilder: © Berlin Partner/FTB-Werbefotografie, Manfred Brückels

September 25 – 29, 2011 · Berlin · Germany

PROGRAMME

8th ECCE 2011
September 25–29 · Berlin · Germany

EFCE

PROCESSNET
EINE INITIATIVE VON DECHEMA UND VDI-GVC

8th European Congress of Chemical Engineering

together with

ProcessNet-Annual Meeting

EFCE Event No. 693

ECAB European Congress of Applied Biotechnology

EUROPEAN FEDERATION OF BIOTECHNOLOGY

DECHEMA
Gesellschaft für Chemische Technik und Biotechnologie e.V.

1st European Congress of Applied Biotechnology

together with

29th DECHEMA's Biotechnology Annual Meeting

www.ecce2011.de

www.ecab2011.eu

P 17.14 **Ionic liquids in aqueous solution: practical implications of supramolecular structuring for protein chemistry**
P. Mester, S. Fuchs, M. Wagner, P. Rossmanith, University of Veterinary Medicine, Vienna/A

P 17.15 **Biased spectroscopic protein quantification in the presence of ionic liquids**
P. Mester, S. Fuchs, M. Wagner, P. Rossmanith, University of Veterinary Medicine, Vienna/A

P 17.16 **Ionic liquids for DNA quantification out of Gram negative and Gram positive bacteria**
S. Fuchs, P. Mester, M. Wagner, P. Rossmanith, University of Veterinary Medicine, Vienna/A

P 17.17 **Synthesis and applications of ionic liquids derived from sugars**
F. Castiglione, Polytechnic University of Milan/I; C. Chiappe, University of Pisa/I; A. Marra, University of Ferrara/I; A. Mele, Polytechnic University of Milan/I

P 17.18 **Experimental measurement of thermal conductivity in pure ILs and their mixtures with water and ethanol**
M. Dominguez-Perez, E. Rilo, J. Vila, J. Pico, University of da Coruña/E; L.M. Varela, University of Santiago de Compostela/E; O. Cabeza, University of da Coruña/E

P 17.19 **Mixed-matrix membranes based on polymer and room-temperature ionic liquid nanocomposites**
A. Corres Ortega, University of the Basque Country, Donostia-San Sebastian/E; M.B. Serrano Santos, University Rovira i Virgili, Tarragona/E; T. Schäfer, University of the Basque Country, Donostia-San Sebastian/E

P 17.20 **Application of ionic liquids for biogas upgrading**
F. Ortloff, D. Buchholz, F. Graf, T. Kolb, DVGW Research Center, Karlsruhe/D

P 17.21 **Low temperature n-alkane isomerisation catalyst: acidic supported ionic liquid in a slurry-phase reaction mode**
C. Meyer, P. Wasserscheid, University of Erlangen-Nuremberg/D

P 17.22 **Online measuring of CO_2 concentration in EMIM NTf_2 under pressure**
K. Kortenbruck, B. Pohrer, E. Schlücker, University of Erlangen-Nuremberg/D

P 17.23 **Vapor pressure of binary 1-butyl-3-methylpyridinium tetrafluoroborate and methanol or ethanol solutions**
J.T. Safarov, University of Rostock/D; I. Kul, Widener University, Chester, PA/USA; W.A. El-Awady, Mansoura University/ET; A.N. Shahverdiyev, Azerbaijan Technical University, Baku/AZ; E.P. Hassel, University of Rostock/D

Membrane technology for water production

P 18.01 **Nanoparticle loaded affinity membranes to extract micropollutants from water**
K. Niedergall, A. Kuhnt, University of Stuttgart/D; T. Hirth, G.E.M. Tovar, Fraunhofer IGB, Stuttgart/D

P 18.02 **Surface modification of mixed matrix membranes for the reduction of fouling**
J. Blath, B.P. Moller, J.P. Barz, University of Stuttgart/D; T. Schiestel, Fraunhofer IGB, Stuttgart/D; T. Hirth, University of Stuttgart/D

P 18.03 **Dynamic washing of highly concentrated suspension with finest particles in rotating disc filters**
D. Goldnik, S. Ripperger, TU Kaiserslautern/D

P 18.04 **Optimal design of membrane-based seawater desalination systems**
P. Linke, S.Y. Alnouri, Texas A&M University at Qatar, Doha/Q

P 18.05 **Permeability model of boron transport in hollow fiber renewal liquid membrane using BEPD as a carrier**
A. Fortuny, M.T. Coll, C.S. Kedari, A.M. Sastre, Polytechnic University of Catalonia, Barcelona/E

P 18.06 **A biofilm MBR for drinking water treatment**
J. Vrtovsek, M. Ravnjak, A. Pintar, National Institute of Chemistry, Ljubljana/SLO

P 18.07 **Fouling resistant novel membranes for ultrafiltration and reverse osmosis**
M. Sankir, S. Bozkir, L. Semiz, N.D. Sankir, TOBB University of Economics and Technology, Ankara/TR

P 18.08 **Catalytic membrane reactors for waste water treatment**
A. Abusouala, E. Iojoiu, K. Fiaty, A. Giroir-Fendler, University of Lyon, Villeurbanne/F

P 18.09 **Electrochemically switchable membranes**
C. Weidlich, K.-M. Mangold, DECHEMA e.V., Frankfurt/D

P 18.10 **Application of response surface methodology in the analysis of operating conditions on nanofiltration of textile effluents**
S. Barredo-Damas, M.I. Alcaina-Miranda, M.I. Iborra-Clar, J.A. Mendoza-Roca, Polytechnic University of Valencia/E

Modelling and simulation

P 24.01 **Chromatographic columns characterisation for SMB (simulated moving bed) separation of glucose and fructose**
L.D.T. Câmara, Rio de Janeiro State University, Nova Friburgo/BR

P 24.02 **Multistage mixing of solids: a way to improve mixing quality and its stability**
V.E. Mizonov, V.S. Leznov, Ivanovo State Power Engineering University/RUS; H. Berthiuax, C. Gatumel, Ecole des Mines d'Albi/F

P 24.03 Cancelled

P 24.04 Cancelled

P 24.05 **Kinetic modelling of the aqueous copolymerisation of acrylamide with N,N'-methylenebisacrylamide**
V.D. Pinto, M.A.D. Gonçalves, R.C.S. Dias, LSRE - Polytechnic Institute of Bragança/P; M.R.P.F.N. Costa, LSRE-FEUP, Porto/P

P 24.06 **I&R system in the field of recycling of phosphorus-containing compounds**
A.S. Yegorkin, G.N. Semenov, E.M. Koltsova, University of Chemical Technology of Russia, Moscow/RUS

P 24.07 **Olefin production by co-feeding methanol and n-butane. Kinetic modelling considering the deactivation of HZSM-5 zeolite**
D. Mier, M. Gamero, A. Ateka, A.T. Aguayo, A.G. Gayubo, J. Bilbao, University of the Basque Country, Leioa/E

P 24.08 **Effect of uncertainty in the reactor model on parameter estimates obtained with nonlinear regression**
H. Haida, A. Seidel-Morgenstern, University of Magdeburg/D

P 24.09 **Control of heat release and temperature levels in jacketed stirred tank reactors**
M. Ali, P.J. Heggs, University of Leeds/UK

P 24.10 **A physically sound model for prediction of the pressure drop in small channel Taylor flow**
A.N. Boran, Sakarya University/TR; M. Wörner, O. Deutschmann, C. Falconi, Karlsruhe Institute of Technology (KIT)/D

P 24.11 **Modelling and simulation of a hazardous chemical process**
L.M. Ríos Hidalgo, L.M. Peralta, B. Guerra Valdés, Central University of Las Villas, Santa Clara/C

P 24.12 **Modelling of the reactor for formaldehyde obtain by coherent-synchronised oxidation of methane by hydrogen peroxide**
T.M. Nagiev, L.M. Gasanova, NAGIEV Institute of Chemical Problems of National Academy of Sciences of Azerbaijan Republic, Baku/AZ

P 24.13 **Modelling and simulation of heat transfer in porous structures**
N. Hornig, U. Fritsching, University of Bremen/D

P 24.14 **Specification of multicomponent mixtures based on real components – validation with crude oil distillation data**
P. Mair-Zelenka, T. Wallek, H. Huemer, TU Graz/A

P 24.15 **Overlapping of distillation regions in ternary heterogeneous mixtures**
A.R. Królikowski, TU Wroclaw/PL

P 24.16 **Some practical aspects of nonlinear frequency response method for investigation of adsorption equilibrium and kinetics**
D. Brzic, M. Petkovska, University of Belgrade/YU

P 24.17 **Dynamic modelling of SO_2 emission control in a fixed bed reactor**
S. Sabbaghian, L. Vafajoo, S. Shirazian, Islamic Azad University, Tehran/IR

P 24.18 **Computer modelling of the methanolysis process of vegetable oil in the vortex layer reactor with the vortical layer of magnetic elements**
D.S. Dvoretskiy, S.I. Dvoretskiy, A.A. Ermakov, S.A. Nagornov, Tambov State Technical University/RUS

P 24.19 **Thermal optimisation of moulds for a thermoforming process in foamed plastic manufacture**
T. Rieckmann, E.S. Yemyo, Cologne University of Applied Sciences/D; S. Völker, University of Kassel/D

P 24.20 **Mathematical modelling of air oxygen concentration process in pressure swing adsorption unit**
E.I. Akulinin, D.S. Dvoretskiy, S.I. Dvoretskiy, A.A. Ermakov, Tambov State Technical University/RUS

P 24.21 **Modelling and simulation of boiling heat transfer during quenching processes**
P. Stark, U. Fritsching, Foundation Institute for Materials Science (IWT), Bremen/D

P 24.22 Cancelled

Kinetic Modeling of the Aqueous Copolymerization of Acrylamide with N,N'-Methylenebisacrylamide

Virgínia Pinto,[1] Miguel Gonçalves,[1] Rolando Dias,[1] Mário Rui Costa[2]

[1]LSRE-Polytechnic Institute of Bragança, Portugal, Email: rdias@ipb.pt

[2]LSRE-FEUP, Porto, Portugal, Email: mrcosta@fe.up.pt

Polyacrylamide (PAAm) and related water-soluble copolymers find important applications in different fields such as petroleum production, environment, papermaking or agriculture. On other hand, polyacrylamide hydrogels are commonly used in electrophoresis and many bioseparations. This research reports kinetic modeling studies concerning the synthesis of PAAm and acrylamide/N,N'-methylenebisacrylamide (AAm/BAAm) hydrogels, in a 2.5 L batch reactor, considering aqueous solution and water in oil inverse suspension polymerizations. Isothermal experimental runs are performed at different temperatures in the range 20 to 60 °C using ammonium persulfate (APS) as initiator and N,N,N',N'-tetramethylethylenediamine (TEMED) as accelerator (at lower temperatures). Different values of the initial mole faction of BAAm in the initial monomer mixture are also considered in these experiments. Information concerning the dynamics of the building process of such materials is obtained using *in-line* FTIR-ATR monitoring and *off-line* SEC/RI/MALLS analysis of samples collected at different reaction time. Experimental measurements are complemented with theoretical studies in the framework of a general kinetic approach based upon population balances equations of generating functions.[1] Formation of hydrogels is affected by non-idealities of the crosslinking process (e.g. different reactivity of vinyl groups or cyclization) with important deleterious effect on the end use properties of such materials.[2,3] Such complexities makes the prediction of physical properties of hydrogels from the synthesis conditions an open problem. With this research is expected to contribute for the elucidation of some of these issues.

[1] M.R.P.F.N. Costa, R.C.S. Dias, *Chem. Eng. Sci*. 2005, 60, 423.

[2] M.Y. Kizilay, O. Okay, *Macromolecules* 2003, 36, 6856.

[3] S. Abdurrahmanoglu, O. Okay, *Macromolecules* 2008, 41, 7759.