French-German Adsorption Conference

October 24 – 26th 2023

ECPM - Strasbourg

Program

Tuesday October 24th

13 :30 *Welcome coffee break*

14 :00 – 14 :15 *Opening remarks*

14 :15 : Liquid adsorption session

14 :15 – 15 :00 **Gabriele Iffland (BASF SE)**
Industrial Applications of Liquid Phase Adsorption

15:00 – 15:20 **S. Gravelle**, Separation of water and ethanol mixtures by nanoporous organosilica; a molecular dynamics study

15:20 – 15:40 **J.W. Lee**, Double-Layer Simulated Moving Bed Chromatography for Ternary Separations: Langmuir Isotherms

15:40 – 16:00 **M. Fiedler,** A molecular dynamics approach to calculate protein adsorption data

16 :00 – 16 :20 *Coffee break*

16 :20 : Characterization Science session

16 :20 – 16 :40 **A. Galarneau,** Characterization of carbon monolith for wastewater treatment under flow

16 :40 – 17 :00 **C. Cuadrado Collados,** Quantitative Assessment of Hydrophilicity/Hydrophobicity in Mesoporous Silica by Combining Adsorption, Liquid Intrusion and Solid-State NMR spectroscopy

17:00 – 17:20 **O. Osta,** The impact of the pore wall hydrophobicity on the density of confined water: A combined nitrogen and water sorption study.

17 :20 – 17 :40 **M. Benamar,** Understanding the evolution of microporosity during hierarchization treatments of side pocket containing zeolites

17:40 – 18 :00 **A. Kahlal,** Towards a DFT approach to Mechanical Properties in Nanoporous Materials

18:00 – 20:00 **Poster session**

Wednesday October 25th

08:40 – 09:25 **Carlos Nieto-Draghi (IFP Energies Nouvelles)**
A new class of descriptors for nanoporous materials and its applications to Classification and CO2 gas adsorption into zeolites

09:25 TSA – processes session

09:25 – 09:45 **B. Claessens,** Cation-exchanged LTA Zeolites for the Separation of Propane and Propylene

09:45 – 10:05 **M. Roehnert,** Binary adsorption of light hydrocarbons on zeolites at low temperatures

10 :05 – 10 :25 **I. Bezverkhy,** D_2/H_2 separation by adsorption in zeolites under cryogenic conditions: understanding the mechanism from experiment and molecular simulation

10 :25 – 10 :45 **N. Braunschweig,** Adsorption Chiller for Industrial Application

10 :45 – 11 :00 *Coffee break*

11 :00 : Gas adsorption session

11:00 - 11:20 **G. Salazar Duarte,** Hidden Adsorption – TSA in industrial gas processing plants

11:20 - 11:40 **M.T. Rozaini,** Shaping of HKUST-1 for CO_2 capture from biogas

11:40 - 12:00 **Y. Xiong,** Transition metal-exchanged GIS zeolites for CO_2/CH_4 separation

12:00 - 12:20 **N. Kofmann,** Direct Air Capture with solid amine sorbents: understanding the effect of water on process performance

12:20 – 12:40 **Y. Magnin,** Carbon Capture in Metal-Organic Frameworks from wet flue gases

12:40 - 14:20 *buffet – poster session*

14:20: CO2 adsorption session

14:20 - 14:40 **R. Morales Ospino,** Chitosan-based activated carbons for CO_2 capture and biogas upgrading

14:40 - 15:00 **K.A. Zervidi,** A hybrid system for capturing CO_2 directly from the air

15:00 - 15:20 **V. Selmert,** Electrospun Carbon Nanofibers as Selective Adsorbent for the Separation of CO_2

15:20 - 15:40 **R. Pinto,** Effective microwave-assisted regeneration of MOF/graphene oxide composites for post-combustion CO_2 capture

15:40 - 16:00 **D. Chakraborty,** MOFs as sustainable sorbents for CO_2 capture solutions

16 :00 – 16 :15 Coffee break

16 :15 : Transport and kinetics session

16:15 -17: **Christian Bläker (University of Duisburg-Essen)**
Methods for Characterization of Activated Carbons, Zeolites and Silica Gels"

17 :00 – 17:20 **S. Dutta,** Mediation of water vapour transport in nanopores via salt solutions: thermodynamic and kinetic study

17 :20 – 17:40 **R. Denoyel,** Impact of tortuosity and surface diffusion on transport through porous media

17 :40 – 18:00 H.O. **Rubiera Landa,** An Efficient Implementation of Maxwell-Stefan Theory for Modeling Gas Separation Processes

18 :00 – 18:20 A . **Grim,** Improvement of axial dispersion estimation in porous media for gases under pressure: Experimental and modelling methods

18 :20 : End of the day

20 :00 : Dinner

Thursday october 26th

09:00 :

09:00 – 09:45 **Cécile Lutz (Arkema)**
Zeolithes for sustainable development

09:45 – 10:05 **S.Ehrling (3P),** The limits of surface and pore volume characterization

10:05 – 10:25 **Micromeritics,** Title to be announced

10 :25 – 10 :45 **J. Dowd (SM),** Vapour Adsorption Studies of Porous Materials

10 :45 – 11 :00 *Coffee break*

11 :00 : Liquid adsorption and recycling session

11:00 - 11:20 **A. Seidel - Morgenstern,** Frontal analysis method for determining adsorption isotherms

11:20 – 11:40 **S. Asad,** New Carbamoyl Surface-modified ZrO2 Nanohybrids for selective Au Extraction from E-Waste

11 :40 - 12:00 **C. Plait,** Mesoporous adsorbent for palladium recovery: synthesis, characterization and adsorption properties

12:00 – 12:10 **Closing remarks**

12 :10 : lunch box and departure

Posters

1. Partially Mg-exchanged GIS for optimized CO2/CH4 and CO2/N2 separations, J. Al Atrach,Y. Xiong, I. Golub, E. B. Clatworthy , R. Guillet-Nicolas, V. Valtchev

2. Evaluation of CO_2-CH_4 separation performances by clay-based adsorbent materials for biogas up-grading, A. El. Azrak, D. Grekov, L. Truche, P. Pré

3. Efficiency of metal-loaded zeolite Y in dye degradation, H. Benaouda, N. Bouchiba

4. Preparation and Characterization of ion-exchanged offretite zeolites with cooper, silver and zinc for antibacterial applications, I. Bouledjouad, D. Dari, F. Djafri, F. Bennabi

5. Immersion Microcalorimetry to study the sulfur-carbon interaction, M-V Coulet, L. Gourmelen, R. Denoyel

6. Hydrogen isotopes separation by selective adsorption on FAU zeolites: influence of Si/Al ratio and cationic composition, C. Coutier, C. Cabaud, J-P. Bellat, I. Bezverkhyy

7. Quantification of Water and Silanol Species on Various Silicas by IR Spectroscopy, J.P. Debs, A. Travert, F. Thibault-Starzyk, P. Ghesquière, N. Malicki

8. Radon adsorption in purely siliceous zeolites: Grand Canonical Monte Carlo simulation study, S. Lyu, I. Deroche, T. Örs, J.-L. Paillaud

9. Molecular Simulation of Acoustic Response of Fluid Adsorption in Nanoporous Materials, L. Didier, A. Sam, R. Venegas, B. Coasne

10. Measurements of thermal effects during intrusion and extrusion of electrolyte solutions in pure silica zeolites, C. Dirand, I. Bezverkhyy, J-P. Bellat

11. Determination of Microporous and Mesoporous Surface Areas and Volumes of Mesoporous Zeolites by Corrected t-plot Analysis, L. Desmurs, A. Galarneau, C. Cammarano, V. Hulea

12. Structural and Energetic Characterization of Silica-Alumina Gels, L. Gehrke, C. Bläker, C. Pasel, D. Bathen

13. Energy consumption of VSA carbon capture; from lab scale to a pilot plant, M. Gholami, J. F. M. Denayer

14. Gas by Molecular Separation Trapdoor mechanism in multicationic zeolites, C. Grimaud, A. Tuel, C. Daniel, D. Farrusseng

15. Textural analysis of various biochar using several probe gases, M. Guilmont**,** E. Ghomri, C. Vaulot, Y. Le Brech, N. Thevenin, R. Gadiou

16. Enhancing gas adsorption through HKUST-1 hybridization with activated carbons, L. Jimenez-Lopez, R. Morales, V. Fierro, A. Celzard

17. Study of glycine behavior in a comet, Y.Kviring, Y.Kviring, J. Simon, M. Salazar

18. Molecular dynamics simulation of glycine in contact with ice, Y. Kviring, JM. Simon, JM Salazar

19. Design of an unprecedent filtration device based on an elastic adsorbent for the adsorption intensification process of metal ions, M. Masquelier, C. Gourmand, L. Jierry and C. Bertagnolli

20. Extruding diffusion constants from your extrudates: pore geometry and adsorbate kinetics, S. R. McIntyre, E. Hunter-Sellars, P. A. Sáenz-Cavazos, A. R. Houghton, D. R. Williams

21. Recent developments in molecular Density Functional Theory: towards a more versatile tool for the characterization of nanoporous materials, C. Miqueu, R. Labeyrie, A. Barthes

22. Competitive CO_2/H_2O Dynamic Column Breakthrough of CALF-20 under Adiabatic Conditions, Tai Nguyen, Sabereh Rezaei , Kasturi Nagesh Pai, Andrew Liu

23. Correlation between gas storage capacity and surface area in MOFs?, M. Perbet, R. Morales, A. Cezelard, V. Fierro, E.A. Quadrelli, D. Farrusseng

24. Investigation of catalytic COS formation on zeolites, S. Pfeifer, C. Pasel, C. Bläker, T. Eckardt, J. Eggebrecht, D. Bathen

25. Impact of airborne nanoparticles on workers' health: a new method based on Krypton gas adsorption, O. Rastoix, S. Merouane, C. Vallieres, D. Rousset

26. Sieving of H_2 and its isotopes by zeolites: Molecular simulations achievements and failures. J. Marcos Salazar, G.C.Q da Silva, J.M. Simon

27. Aspects of a novel sensitive method for meso-macropore analysis based on nitrogen adsorption at the triple point temperature (63 K) M. Terlinden, F. Kleitz, M. Thommes

28. Development and application of a novel pore network model for physisorption characterization, J. Söllner, M. Thommes

29. CPO-27(Ni) pelletization: Impact on structural, textural, and thermal properties, G. Trierweiler Gonçalves, L. Michelin, L. Josien, J.-L. Paillaud, G. Chaplais

30. Frontal analysis method with fractional sampling technique using a tandem HPLC system, S. Zarei, J. W. Lee, A. Seidel-Morgenstern