

### April 2011

SMS instruments are used over a wide range of disciplines. To keep abreast with cutting edge research using dynamic vapor sorption and inverse gas chromatography, SMS regularly reviews the literature. The below papers present recent peer-reviewed articles utilizing gravimetric vapor sorption or inverse gas chromatography.

## DVS Articles:

JF Remanar, MD Tawa, ML Peterson, O Almarsson, MB Hickey, and BM Foxman, "**Celecoxib sodium salt: engineering crystal forms for performance**" *CrystEngComm*, 13(4): 1081-1089 (2011).

V Sharratt, CAS Hill, J Zaihan, and DPR Kint, "**Photodegradation and weathering effects on timber surface moisture profiles as studied by DVS**" *Polymer Degradation and Stability*, 95(12): 2659-2662 (2010).

H Bahaj, M Bakass, C Bayane, M Benchanaa, and G Bertrand, "**Modeling of water vapour adsorption isotherms onto polyacrylic polymer**" *Journal of Thermal Analysis and Calorimetry*, 103(1): 117-123 (2011).

SA Bernal, RM de Gutierrez, AL Pedraza, JL Provis, ED Rodriguez, and S Delvasto, "**Effect of binder content on the performance of alkali-activated slag concretes**" *Cement and Concrete Research*, 41(1): 1-8 (2011).

S Belbekhouche, J Bras, G Siqueira, C Chappey, L Lebrun, B Khelifi, S Marais, and A Dufresne, "**Water sorption behaviour and gas barrier properties of cellulose whiskers and microfibrils films**" *Carbohydrate Polymers*, 83(4): 1740-1748 (2011).

J Zaihan, CAS Hill, WS Hashim, JM Dahlan, and DW Sun, "**Analysis of the water vapour sorption isotherms of oil palm trunk and rubberwood**" *Journal of Tropical Forest Science*, 23(1): 97-105 (2011).

ML Hassan, EA Hassan, and KN Oksman, "**Effect of pretreatment of bagasse fibers on the properties of chitosan/microfibrillated cellulose nanocomposites**" *Journal of Materials Science*, 46(6): 1732-1740 (2011).

KJ Paluch, L Tajber, T McCabe, JE O'Brien, OI Corrigan, and AM Healy, "**Preparation and characterization of novel chlorothiazide potassium solid-state salt forms: Intermolecular self assembly suprastructures**" *European Journal of Pharmaceutical Sciences*, 42(3): 220-229 (2011).

Y Zhong, XY Song, and YF Li, "**Antimicrobial, physical and mechanical properties of kudzu starch-chitosan composite films as a function of acid solvent types**" *Carbohydrate Polymers*, 84(1): 335-342 (2011).

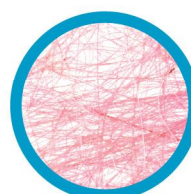
S Khoonsap and S Amnuaypanich, "**Mixed matrix membranes prepared from PVA incorporated with zeolite 4A-g-PHEMA for the pervaporation dehydration of water-acetone mixtures**" *Journal of Membrane Science*, 367(1-2): 182-189 (2011).

HPSA Khalil, MRN Fazita, M Jawaid, AH Bhat, and CK Abdullah, "**Empty fruit bunches as a reinforcement in laminated bio-composites**" *Journal of Composite Materials*, 45(2): 219-236 (2011).

YO Aochi and WJ Farmer, "**Effects of surface charge and particle morphology on the sorption/desorption behaviour of water on clay minerals**" *Colloids and Surfaces A*, 374(1-3): 22-32 (2011).

YJ Xia, CAS Hill, Z Jalaludin, SF Curling, RD Anandjiwala, AJ Norton, and G Newman, "**The dynamic water vapour sorption behaviour of natural fibres and kinetic analysis using the parallel exponential kinetics model**" *Journal of Materials Science*, 46(2): 479-489 (2011).

XD Yuan, BP Carter, and SJ Schmidt, "**Determining the critical relative humidity at which the glassy to rubber transition occurs in polydextrose using automatic water vapour sorption instrument**" *Journal of Food Science*, 76(1): E78-E89 (2011).



# The Total Sorption Solution

QE Li and SJ Schmidt, "Use of ramping and equilibrium water vapour sorption methods to determine the critical relative humidity at which the glassy to rubbery transition occurs in polydextrose" *Journal of Food Science*, 76(1): E149-E157 (2011).

A Mani and S Holdcroft, "Highly dependent mass-transport parameters for ORR in Nafion 211" *Journal of Electroanalytical Chemistry*, 651(2): 211-215 (2011).

DPM Torres, M Bastos, MDF Goncalves, JA Teixeira, and LR Rodrigues, "Water sorption and plasticization of an amorphous galacto-oligosaccharide mixture" *Carbohydrate Polymers*, 83(2): 831-835 (2011).

YJ Xie, CAS Hill, ZF Xiao, C Mai, and H Militz, "Dynamic water vapour sorption properties of wood treated with glutaraldehyde" *Wood Science and Technology*, 45(1): 49-61 (2011).

KJ Paluch, L Tajber, T McCabe, JE O'Brien, OI Corrigan, and AM Healy, "Preparation and solid state characterization of chlorothiazide sodium intermolecular self-assembly suprastructure" *European Journal of Pharmaceutical Sciences*, 41(5): 603-611 (2010).

TM Todoruk, and ID Hartley, "Sorption isotherm of lodgepole pine (*Pinus contorta* Dougl. Ex Loud.) pulp chips affected by the mountain pine beetle (*Dendroctonus ponderosae*)" *Holzforschung*, 65(1): 109-112 (2011).

VD Barrera-Garcia, D Chassagne, C Paulin, J Raya, J Hirschinger, A Voiley, J-P Bellat, and RD Gougeon, "Interaction mechanisms between Guaiacols and Lignin: The conjugated double bond makes the difference" *Langmuir*, 27(3): 1038-1043 (2011).

SG Rinaldo, CW Monroe, T Romero, W Merida, and M Eikerling, "Vaporization-exchange model for dynamic water sorption in Nafion: Transient solution" *Electrochemistry Communications*, 13(1): 5-7 (2011).

RK Vishwakarma, US Shivhare, and SK Nanda, "Moisture adsorption isotherms of guar (*Cyamopsis tetragonoloba*) grain and guar gum splits" *LWT-Food Science and Technology*, 44(4): 969-975 (2011).

## IGC Articles:

PR Rani, S Ramanaiah, and KS Reddy, "Lewis acid-base properties of cellulose acetate butyrate by IGC" *Surface and Interface Analysis*, 43(3): 683-688 (2011).

E Langer and G Kaminska-Bach, "Some thermodynamic parameters of acrylic resins determined by IGC" *Przemysl Chemiczny*, 90(1): 132-134 (2011).

AE Jefferson, DR Williams, and JYY Heng, "Computing the surface energy distributions of heterogeneous crystalline powders" *Journal of Adhesion Science and Technology*, 25(4-5): 339-355 (2011).

LJ Jallo, YH Chen, J Bowen, F Etzler, and R Dave, "Prediction of inter-particle adhesion force from surface energy and surface roughness" *Journal of Adhesion Science and Technology*, 25(4-5): 367-384 (2011).

NS Trasi, SXM Boerrigter, SR Byrn and TM Carvajal, "Investigating the effect of dehydration conditions on the compactability of glucose" *International Journal of Pharmaceutics*, 406(1-2): 55-61 (2011).

M Yamauchi, EH Lee, A Otte, SR Bryn, and MT Carvajal, "Contrasting the surface and bulk properties of anhydrate and dehydrated hydrate materials" *Crystal Growth & Design*, 11(3): 692-698 (2011).

GK Karaoglan and D Sakar, "The surface characterization of a novel D-pi-D type ligand by IGC at infinite dilution" *Chromatographia*, 73(1-2): 93-98 (2011).

T Hamieh, J Toufaily, and AH Mouneimne, "Effect of the tacticity of PMMA adsorbed on alumina and silica on the specific entropy change of polymer by IGC" *Chromatographia*, 73(1-2): 99-107 (2011).

A Askin, SS Etoz, DT Yazici, and F Tumsek, "Examination of polystyrene by IGC: Part 1 and Part 2" *Chromatographia*, 73(1-2): 109-122 (2011).

YC Qin, YT Bi, HB Ren, FH Zhu, MM Luo, and L Zhang, "Poly(methyl methacrylate)/Methacryl-POSS nanocomposites with excellent thermal properties" *Chinese Journal of Chemistry*, 28(12): 2527-2532 (2010).

SJ Hayward, YD Lei, and F Wania, "Sorption of a diverse set of organic chemical vapors onto XAD-2 resin: Measurement, prediction and implications for air sampling" *Atmospheric Environment*, 45(2): 296-302 (2011).

C Vaultot, P Ziegler, and B Haidar, "Physicochemical driving forces behind exfoliation process of a synthetic montmorillonite in PDMS polymers" *Polymer*, 52(3): 700-707 (2011).

F Djouani, C Connan, M Delamar, MM Chehimi, and K Benzarti, "Cement paste-epoxy adhesive interactions" *Construction and Building Materials*, 25(2): 411-423 (2011).

N Cordeiro, C Gouveia, AGO Moraes, and K Benzarti, "**Natural fibers characterization by IGC**" *Carbohydrate Polymers*, 84(1): 110-117 (2011).

TM Roshchina, NK Shoniya, OY Tayakina, and AY Fadeev, "**Vapor phase adsorption of organic compounds on octyl silicas**" *Russian Journal of Physical Chemistry A*, 82(2): 298-305 (2011).

NA Belov, AP Safronov, and YP Yampolskii, "**Thermodynamics of sorption in an amorphous perfluorinated copolymer aF1600 studied by IGC**" *Macromolecules*, 44(4): 902-912 (2011).

BL Shi, YE Wang, and LN Jia, "**Comparison of Dorris-Gray and Schultz methods for the calculation of surface dispersive free energy by IGC**" *Journal of Chromatography A*, 1218(6): 860-862 (2011).

S Ramanaiah, PR Rani, TVM Sreekanth, and KS Reddy, "**Determination of Hansen solubility parameters for the solid surface of cellulose acetate butyrate by IGC**" *Journal of Macromolecular Science Part B*, 50(3): 551-532 (2011).

J Kim, W Qian, and ZY Al-Saigh, "**Measurements of water sorption enthalpy on polymer surfaces and its effect on protein adsorption**" *Surface Science*, 605(3-4): 419-423 (2011).

QG Zhang, BC Fan, QL Liu, AM Zhu, and FF Shi, "**A novel poly(dimethyl siloxane)/poly(oligosilsesquioxanes) composite membrane for pervaporation desulfurization**" *Journal of Membrane Science*, 366(1-2): 335-341 (2011).

NS Bobbitt and JW King, "**Physicochemical characterization of dilute n-alcohol/biodiesel mixtures by IGC**" *Journal of Chromatography A*, 1217(50): 7898-7906 (2011).

N Cordeiro, C Gouveia, and MJ John, "**Investigation of surface properties of physic-chemically modified natural fibers using IGC**" *Industrial Crops and Products*, 33(1): 108-115 (2011).

G Bronner, K Fenner, and KU Goss, "**Hexadecane/air partitioning coefficients of multifunctional compounds: Experimental data and modeling**" *Fluid Phase Equilibria*, 299(2): 207-215 (2011).

SC Das, I Larson, DAV Morton, and PJ Stewart, "**Determination of the polar and total surface energy**

**distributions of particulates by IGC**" *Langmuir*, 27(2): 521-523 (2011).

YH Shih and SM Chou "**Characterization of adsorption mechanisms of volatile organic compounds with montmorillonite at different levels of relative humidity via a linear salvation energy relationship approach**" *Journal of Chemical Engineering Data*, 55(12): 5766-5770 (2010).

## New SMS Publications

DJ Burnett, JYY Heng, F Thielmann, AR Garcia, M Naderi, and M Acharya "**Measuring Surface Roughness of Pharmaceutical Powders Using Vapor Sorption Methods**" *AAPS PharmSciTech*, 12(1): 56-61 (2011).

## Upcoming Conferences

**British Zeolite Association:** Edinburgh, Scotland; 11-13 April 2011.

**Society of Cosmetic Chemists:** Raritan, NJ, USA; 10-11 May 2011.

**AAPS Biotech:** San Francisco, CA, USA; 16-19 May 2011.

**IFT:** New Orleans, LA, USA; 11-15 June 2011.

**IWPCPS-13:** Indianapolis, IN, USA; 20-23 June 2011.

**APS Inhalation:** Bath, UK; 4-6 July 2011.

## SEA Webinar

**04 May 2011:** Overview presentation will focus on the wide range of applications covered by the SEA instrument. To register for the webinar, please email [info@smsna.com](mailto:info@smsna.com).

## SMS Training

**SMS US Office:** 24-25 May 2011; email [science@smsna.com](mailto:science@smsna.com) for details.

**SMS UK Office:** 06-07 September 2011; email [science@smsuk.co.uk](mailto:science@smsuk.co.uk) for details.

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