

July 2012

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:

G Bingol, B Prakash, and Z Pan, "Dynamic vapor sorption isotherms of medium grain rice varieties" *Food Science and Technology*, 48(2): 156-163 (2012).

S Rujvapat and R Bodmeier, "Moisture plasticization for enteric EudragitL30D-55-coated pellets prior to compression into tablets" *Euro. J. Pharm. and Biopharm.*, 81: 223-229 (2012).

SE Oulboukhitine, R Belarbi, and R Djedjig, "Characterization of green roof components: Measurements of thermal and hydrological properties" *Building and Environment*, 56: 78-85 (2012).

ML Hassan, J Bras, EA Hassan, SM Fadel, and A Dufresne, "Polycaprolactone/modified bagasse whisker nanocomposites with improved moisture-barrier and biodegradability properties" *Journal of Applied Polymer Science*, 125(S1): E10-E19 (2012).

K Aniskevich, A Aniskevich, A Arnautov, and J Jansons, "Mechanical properties of pultruded glass fiber-reinforced plastic after moistening" *Composite Structures*, 94(9): 2914-2919 (2012).

C Yamamoto, TL Neoh, Y Honbou, T Furuta, S Kimura, and H Yoshii, "Evaluation of Flavor Release From Spray-Dried Powder by Ramping with Dynamic Vapor Sorption-Gas Chromatography" *Drying Technology*, 30(10): 1045-1050 (2012).

MA Pavan, SJ Schmidt, and H Feng, "Water sorption behavior and thermal analysis of freeze-dried, refractance window-dried and hot-air dried acai juice" *Food Science and Technology*, 48(1): 75-81 (2012).

BP Carter and SJ Schmidt, "Developments in glass transition determination in foods using moisture sorption isotherms" *Food Chemistry*, 132(4): 1693-1698 (2012).

SK Saw, G Sarkhel, and A Choudhury, "Preparation and characterization of chemically modified Jute-Coir hybrid fiber reinforced epoxy novolac composites" *Journal of Applied Polymer Science*, 125(4): 3038-3049 (2012).

YC Zhang, X Yuan, MR Thompson, and Q Liu, "Characterization of extruded film based on thermoplastic potato flour" *Journal of Applied Polymer Science*, 125(4): 3250-3258 (2012).

N Potes, JP Kerry, and YH Roos, "Additivity of water sorption, alpha-relaxations and crystallization inhibition in lactose-maltodextrin systems" *Carbohydrate Polymers*, 89(4): 1050-1059 (2012).

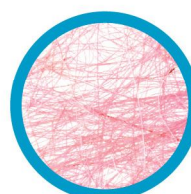
AC Delgic, H Pekmez, and KB Belibagli, "Effect of drying method on the moisture sorption isotherms and thermodynamic properties of mint leaves" *Journal of Food Science and Technology*, 49(4): 439-449 (2012).

J Martin-Santos, M Vioque, and R Gomez, "Thermodynamic properties of moisture adsorption of whole wheat flour. Calculation of net isotheric heat" *International Journal of Food science and Technology*, 47(7): 1487-1495 (2012).

RUD Nassar and P Soroushian, "Green and durable mortar produced with milled waste glass" *Magazine of Concrete Research*, 64(7): 605-615 (2012).

SF Chow, M Chen, LM Shi, AHL Chow, and CC Sun, "Simultaneously improving the mechanical properties, dissolution performance, and hygroscopicity of Ibuprofen and Flurbiprofen by cocrystallization with Nicotinamide" *Pharmaceutical Research*, 29(7): 1854-1865 (2012).

D Argyropoulos, R Alex, R Kohler, and J Muller, "Moisture sorption isotherms and isotheric heat of sorption of leaves



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and stems of lemon balm established by dynamic vapor sorption" *Food Science and Technology*, 47(2): 324-331 (2012).

Z Escobedo-Avellaneda, G Velazquez, JA Torres, and J Welti-Chanes, "**Inclusion of the variability of model parameters on shelf-life estimations for low and intermediate moisture vegetables**" *Food Science and Technology*, 47(2): 364-370 (2012).

MD Torres, R Moreira, F Chenlo and MJ Vazquez, "**Water adsorption isotherms of carboxymethyl cellulose, guar, locust bean, tragacanth and xanthan gums**" *Carbohydrate Polymers*, 89(2): 1630-1637 (2012).

MA Modestino, A Kusoglu, A Hexemer, A Weber, and RA Segalman, "**Controlling Nafion structure and properties via wetting interactions**" *Macromolecules*, 45(11): 4681-4688 (2012).

S Bianco, V Caron, L Tajber, OI Corrigan, L Nolan, Y Hu, and AM Healy, "**Modification of the solid-state nature of sulfathiazole and sulfathiazole sodium by spray drying**" *AAPS PharmSciTech*, 13(2): 647-660 (2012).

CH Zing, XJ Liu, QZ Jin, JW Li, JH Huang, YF Liu, and XG Wang, "**Moisture sorption thermodynamics of camellia oleifera**" *Food Biophysics*, 7(2): 163-172 (2012).

Y Znamenskaya, J Sotres, J Engblom, T Arnebrant, and V Kocherbitov, "**Effect of hydration on structural and thermodynamic properties of pig gastric and bovine submaxillary gland mucins**" *Journal of Physical Chemistry B*, 116(16): 5047-5055 (2012).

N Follain, S Roualdes, S Marais, J Frugier, M Reinholdt, and J Durand, "**Water transport properties of plasma-modified commercial anion-exchange membrane for solid alkaline fuel cells**" *Journal of Physical Chemistry C*, 116(15): 8510-8522 (2012).

Y Xie, CAS Hill, DY Sun, Z Jalaludin, and Q Wang, "**Effects of extractives on the dynamic water swelling behavior and fungal resistance of Malaysian hardwood**" *Journal of Tropical Forest Science*, 14(2): 231-240 (2012).

C Pignoly, L Camps, G Susini, I About, and J Camps, "**Influence of in-office whitening gel pH on hydrogen peroxide diffusion through enamel and color changes in bovine teeth**" *American Journal of Dentistry*, 25(2): 91-96 (2012).

J Eitelberger and S Svensson, "**The sorption behavior of wood studied by means of an improved cup method**" *Transport in Porous Media*, 92(2): 321-335 (2012).

YG Zhang, J Evans, W Rowe, K Dinehart, B Quinn, and P Connelly, "**Dosable solvates of ivacftor with high boiling point liquids**" *Crystengcomm*, 14(7): 2422-2427 (2012).

IGC Articles:

I Murrieta-Pazos, C Gaiani, L Galet, R Calvet, B Cuq, and J Scher, "**Food powders: Surface and form characterization revisited**" *Journal of Food Engineering*, 112(1-2): 1-21 (2012).

M Maciejewska, L Szajnecki, and B Gawdzik, "**Investigation of the surface area and polarity of porous copolymers of maleic anhydride and divinylbenzene**" *Journal of Applied Polymer Science*, 125(1): 300-307 (2012).

B Imre, G Keledi, K Renner, J Moczo, M Murariu, P Dubois, and B Pukanszky "**Adhesion and micromechanical deformation processes in PLA/CaSO₄ composites**" *Carbohydrate Polymers*, 89(3): 759-767 (2012).

SV Blokhina, MVOI'khovich, and AV Sharapova, "**The influence of the generation number of liquid-crystalline polypropyleneiminedendrimers on the sorption of low-molecular-weight compounds**" *Russian Journal of Physical Chemistry A*, 86(7): 1143-1151 (2012).

C Panayiotou, "**Partial solvation parameters and mixture thermodynamics**" *Journal of Physical Chemistry B*, 116(24): 7302-7321 (2012).

HR Pakravan, M Jamshidi, M Latifi, and MM Chehimi, "**Polymeric fibre adhesion to the cementitious matrix related to the fibres type, water to cement ratio and curing time**" *Int. J. of Adhesion and Adhesives*, 35:102-107 (2012).

NE Moustafa, EA Eissa, and KEF Mahmoud, "**IGC study of the oxidation stability of lubricating base oil via linear solvation energy relationship**" *Lubrication Science*, 24(4): 165-173 (2012).

N El-Thaher and P Choi, "**Effect of preheating treatment on the measured heats of adsorption of organic probes on clays with different surface compositions**" *Ind. & Eng. Chemistry Research*, 51(20): 7022-7027 (2012).

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ES Abdel-Halim, "**Physicochemical properties of differently pretreated cellulosic fibers**" *Carbohydrate Polymers*, 88(4): 1201-1207 (2012).

A Ashori, M Ornelas, S Sheshmani, and N Cordeiro, "**Influence of mild alkaline treatment on the cellulosic surfaces via active sites**" *Carbohydrate Polymers*, 88(4): 1293-1298 (2012).

N Islam and MJ Cleary, "**Developing an efficient and reliable dry powder inhaler for pulmonary drug delivery – A review for multidisciplinary researchers**" *Medical Engineering & Physics*, 34(4): 409-427 (2012).

XW Fu, ZM Ni, and J Liu, "**Surface Characterization of Copper-Aluminum-Magnesium hydrotalcites invested by IGC**" *Acta Chimica Sinica*, 70(8): 968-972 (2012).

LS de Lara, MF Michelon, CO Metin, QP Nguyen, and CR Miranda, "**Interface tension of silica hydroxylated nanoparticle with brine: A combined experimental and molecular dynamics study**" *Journal of Chemical Physics*, 136(6): 164702 (2012).

L Boudriche, R Calvet, B Hamdi, and H Balard, "**Surface properties evolution of attapulgite by IGC analysis as a function of thermal treatment**" *Colloids and Surfaces A*, 399(1): 1-10 (2012).

G Cunningham, M Lotya, CS Cucinotta, S Sanvito, SD Bergin, R Menzel, MSP Shaffer, and JN Coleman, "**Solvent exfoliation of transition metal dichalcogenides: Dispersibility of exfoliated nanosheets varies only weakly between compounds**" *ACS Nano*, 6(4): 3468-3480 (2012).

B Strzemiescka, A Voelkel, and J Kolodziejek, "**IGC characterization of aluminosilicates as fillers for abrasive articles**" *Chromatographia*, 75(7-8): 353-360 (2012).

BL Shi and DW Qi, "**A method for improving the calculation accuracy of acid-base constants by IGC**" *Journal of Chromatography A*, 1232: 73-76 (2012).

G Pilcer, N Wauthoz, and K Amighi, "**Lactose characteristics and the generation of the aerosol**" *Advanced Drug Delivery Reviews*, 64(3): 233-256 (2012).

MD Jones, P Young, and D Traini, "**The use of IGC for the study of lactose and pharmaceutical materials used in dry powder inhalers**" *Advanced Drug Delivery Reviews*, 64(3): 285-293 (2012).

ZM Ni, XW Fu, JL Xue, and Y Li, "**Surface characterization of layered double hydroxides by compounding modification**

with surfactant and silane coupling agent" *Chinese Journal of Inorganic Chemistry*, 28(3): 471-476 (2012).

VNP Le, H Bierend, E Robins, H Steckel, and MP Flament, "**Influence of the lactose grade within dry powder formulations of fluticasone propionate and terbutalinesulphate**" *Int. J. Pharm*, 422(1-2): 75-82 (2012).

RMenzel, A Bismarck, and MSP Shaffer "**Deconvolution of the structural and chemical surface properties of carbon nanotubes by inverse gas chromatography**" *Carbon*, 50(10): 3416-3421 (2012).

New SMS Publications:

Application Notes

"Characterisation of Wheat Straw for Bio-fuel Application" *DVS Application Note 57.*

"Surface Energetic Heterogeneity of Carbon-based Nanomaterials" *IGC Application Note 226.*

SMS Training:

SMSNA Office: 11 September 2012 (DVS) and 12 September 2012 (IGC/SEA); Email Science@smsna.com for details.

SMSUK Office: 04 September 2012 (DVS); 05 September 2012 (IGC/SEA); Email Science@smsuk.co.uk for details.

Upcoming Conferences:

Society of Wood Science and Technology: Beijing, China; 1-2 27-31 August 2012; Exhibitor and Presenter.

Poster Presentation: "Characterisation of Wheat Straw Using Dynamic Vapour Sorption Method"

APS PharmSci Fair 2012: East Midlands Conference Centre, Nottingham, UK; 12-14 September 2012; Exhibitor.

AAPS Annual Meeting: Chicago, IL, USA; 14-18 October 2012; Exhibitor and Presenter.

Poster Presentation: Correlating Surface Energy and Wettability Measured by IGC to Dissolution Properties of Dry Powder Inhaler Formulations

Poster Presentation: Monitoring Moisture-Induced Phase Transformations using in-situ Raman Spectroscopy and Gravimetric Vapor Sorption Methods

Poster Presentation: Prediction of electrostatic charging behaviour of medical device polymers

AICHe: Pittsburgh, PA, USA; 28 Oct - 02 Nov 2012; Exhibitor and Presenter.

Poster Presentation: Water and Methanol Vapor Diffusion Rates in Proton Exchange Membranes

Oral Presentation: Energetic Heterogeneity of Carbon Fibers with Different Surface Treatments and the Effects on Wettability

Oral Presentation: Measuring the Energetic Heterogeneity of Pharmaceutical Powders and the Effects On Powder Processing and Formulation

DACH User Meeting: Germany; 07-08 Nov 2012; Exhibitor and Presenter.

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