

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:

YQ Jiang, KJ Mao, XH Cai, SJ Lai, and XX Chen, "**Poly(ethyl glycol) assisting water sorption of poly(epsilon-caprolactone) blend for drug deliver**" *Journal of Applied Polymer Science*, 122(4): 2309-2316 (2011).

S Poyet, S Charles, N Honore, and V L'hostis, "**Assessment of the unsaturated water transport properties of an old concrete: Determination of the pore-interaction factor**" *Cement and Concrete Research*, 41(10): 1015-1023 (2011).

HH Su, XH Zhong, GZ Zhan, YF Yu, and WJ Gan, "**Improvement of interface interaction and conductive anodic filament resistance through amphiphilic oligomeric silane**" *Journal of Applied Polymer Science*, 122(4): 2317-2324 (2011).

JE Fernandes, TND Dantas, JLC Fonseca, and MR Pereira, "**Carnauba straw: Characterization and chemical treatments**" *Journal of Applied Polymer Science*, 122(3): 1614-1621 (2011).

J Seo, G Jeon, ES Jang, SB Khan, and H Han, "**Preparation and properties of poly(propylene carbonate) and nanosized ZnO composite films for packaging applications**" *Journal of Applied Polymer Science*, 122(2): 1101-1108 (2011).

I Murrieta-Pazos, C Gaiani, L Galet, B Cuq, S Desobry, and J Scher, "**Comparative study of particle structure evolution during water sorption: Skim and whole milk powders**" *Colloids and Surfaces B*, 87(1): 1-10 (2011).

S Arora, SR Sharma, and S Kumar, "**Thermodynamic models for water sorption by garlic**" *Journal of Food Science and Technology*, 48(5): 604-609(2011).

W Fortuniak, U Mizerska, J Chojnowski, T Basinska, S Slomkowski, MM Chehimi, A Konopacka, K Turecka, and W Werel, "**Polysiloxanes with quaternary ammonium salt biocidal functions and their behavior when incorporated into a silicone elastomer network**" *Journal of Inorganic and Organometallic Polymers and Materials*, 21(3): 576-589 (2011).

A Siwinska and H Garbalinska, "**Thermal conductivity coefficient of cement-based mortars as air relative humidity function**" *Heat and Mass Transfer*, 47(9): 1077-1087 (2011).

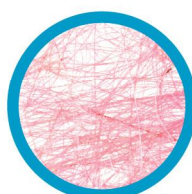
QH Zhang, KLA Chan, GJ Zhang, T Gillece, L Senak, DJ Moore, R Mendelsohn, and CR Flach, "**Raman microspectroscopic and DVS characterization of hydration in collagen and dermal tissue**" *Biopolymers*, 95(9): 607-615 (2011).

VG Mir, J Heinamaki, O Antikainen, AI Colarte, S Airaksinen, M Karjalainen, OB Revoredo, OM Nieto, J Yliruusi, "**Effects of moisture on tablet compression of chitin**" *Carbohydrate Polymers*, 86(2): 477-483 (2011).

P Rocculi, G Sacchetti, L Venturi, M Cremonini, MD Rosa, and P Pittia, "**Role of water state and mobility on the antiplasticization of green and roasted coffee beans**" *Journal of Agricultural and Food Chemistry*, 59(15): 8265-8271 (2011).

V Fernandez, M Khayet, P Montero-Prado, JA Heredia-Guerrero, G Liakopoulos, G Karabourniotis, V del Rio, E Dominguez, I Tacchini, C Nerin, J Val, and A Herdia, "**New insights into the properties of pubescent surfaces: Peach fruit as a model**" *Plant Physiology*, 156(4): 2098-2108 (2011).

AV Gerasimov, MA Ziganshin, AE Vandyukov, VI Kovalenko, VV Gorbachuk, AM Caminade, and JP Majoral, "**Specific vapor sorption properties of phosphorus-containing**



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**dendrimers**" *Colloid and Interface Science*, 360(1): 204-210 (2011).

KJ Paluch, L Tajber, CJ Elcoate, OI Corrigan, SE Lawrence, and AM Healy, "**Solid-state characterization of novel active pharmaceutical ingredients: Cocrystal of a Salbutamol Hemiadipate salt with Adipic Acid (2:1:1) and Salbutamol Hemisuccinate salt**" *Journal of Pharmaceutical Sciences*, 100(8): 3268-3283 (2011).

HB Li, MH Ai, BZ Liu, SJ Zheng, and GQ Zong, "**Water vapor sorption on surfactant-templated porous silica xerogels**" *Microporous and Mesoporous Materials*, 143(1): 1-5(2011).

J Ooi, D Traini, S Hoe, W Wong, and PM Young, "**Does carrier size matter: A fundamental study of drug aerosolisation from carrier based dry powder inhalation systems**" *International Journal of Pharmaceutics*, 413(1-2): 1-9 (2011).

HH Liu, D Chaudhary, G Ingram, and J John, "**Interactions of hydrophilic plasticizer molecules with amorphous starch biopolymer-An investigation into the glass transition and the water activity behavior**" *Journal of Polymer Science B*, 49(14): 1041-1049 (2011).

V Sharratt, CAS Hill, J Zaihan, and DPR Kint, "**The influence of photodegradation and weathering on the water vapour sorption kinetic behaviour of scots pine earlywood and latewood**" *Polymer Degradation and Stability*, 96(7): 1210-1218 (2011).

YF Li, HP Jia, QL Cheng, and ZY Jiang, "**Sodium alginate-gelatin polyelectrolyte complex membranes with both high water vapor permeance and high permselectivity**" *Journal of Membrane Science*, 375(1-2): 30-312 (2011).

T Soboleva, K Malek, Z Xie, T Navessin, and S Holdcroft, "**PEMFC catalyst layers: The role of micropores and mesopores on water sorption and fuel cell activity**" *ACS Applied Materials & Interfaces*, 3(6): 1827-1837 (2011).

H Ranaivomanana, J Verdier, A Sellier, and X Bourbon, "**Toward a better comprehension and modeling of hysteresis cycles in the water sorption-desorption process for cement based materials**" *Cement and Concrete Research*, 41(8): 817-827 (2011).

V Baroghel-Bouny, M Thiery, and X Wang, "**Modelling of isothermal coupled moisture-ion transport in cementitious materials**" *Cement and Concrete Research*, 41(8): 828-841 (2011).

## IGC Articles:

O Yazici, D Sakar, O Cankurtaran, and F Karaman, "**Thermodynamical study of poly(n-hexyl methacrylate) with some solvents by IGC**" *Journal of Applied Polymer Science*, 122(3): 1815-1822 (2011).

XT Shi, I Bertoti, B Pukanszky, R Rosa, and A Lazzeri, "**Structure and surface coverage of water-based stearate coatings on calcium carbonate nanoparticles**" *Journal of Colloid and Interface Science*, 362(1): 67-73 (2011).

Y Li, LS Wang, YX Feng, and CY Zhang, "**Activity coefficients of organic solutes at infinite dilution in ionic liquids**" *Industrial & Engineering Chemistry Research*, 50(18): 10755-10764 (2011).

F Mutelet, V Ortega-Villa, JC Moise, and WE Acree, "**Prediction of partition coefficients of organic compounds in ionic liquids using temperature-dependent linear solvation energy relationship with parameters calculated through a group contribution method**" *Journal of Chemical and Engineering Data*, 56(9): 3598-3606 (2011).

WE Acree, GA Baker, F Mutelet, and JC Moise, "**Partition coefficients of organic compounds in four new tetraalkylammonium bis(trifluoromethylsulfonyl)imide ionic liquids using IGC**" *Journal of Chemical and Engineering Data*, 56(9): 3688-3697 (2011).

J Brum and D Burnett, "**Quantification of surface amorphous content using dispersive surface energy: The concept of effective amorphous surface area**" *AAPS PharmSciTech*, 12(3): 887-892 (2011).

T Hamieh, "**Determination of the transition phenomena of poly(alpha-n-alkyl) methacrylates adsorbed on silica by IGC**" *Journal of Polymer Research*, 18(5): 1159-1168 (2011).

R Ho, SE Dilworth, DR Williams, and JYY Heng, "**Role of surface chemistry and energetics in high shear wet granulation**" *Industrial & Engineering Chemistry Research*, 50(16): 9642-9649 (2011).

A Rivera, T Farias, LC de Menorval, G Autie-Castro, H Yee-Madeira, JL Contreras, and M Autie-Perez, "**Acid natural clinoptilolite: Structural properties against adsorption/separation of n-paraffins**" *Journal of Colloid and Interface Science*, 360(31): 220-226 (2011).

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ZS Dai, BY Zhang, FH Shi, M Li, ZG Zhang, and YZ Gu, "Effect of heat treatment on carbon fiber surface properties and fibers/epoxy interfacial adhesion" *Applied Surface Science*, 257(20): 8457-8461 (2011).

Q Zhou, JA Denman, T Gengenbach, S Das, L Qu, HL Zhang, I Larson, PJ Stewart, and DAV Morton, "Characterization of the surface properties of a model pharmaceutical fine powder modified with a pharmaceutical lubricant to improve flow via mechanical dry coating approach" *Journal of Pharmaceutical Sciences*, 100(8): 3421-3430 (2011).

P Reddy, KJ Chiyen, N Deenadayalu, and D Ramjugernath, "Determination of activity coefficients at infinite dilution of water and organic solutes (polar and non-polar) in the Ammoeng 100 ionic liquid at T=(308.15, 313.5, 323.15, and 333.15) K" *Journal of Chemical Thermodynamics*, 43(8): 1178-1184 (2011).

SC Das, Q Zhou, DAV Morton, I Larson, and PJ Stewart, "Use of surface energy distributions by IGC to understand mechanofusion processing and functionality of lactose coated with magnesium stearate" *European Journal of Pharmaceutical Sciences*, 43(4): 325-333 (2011).

JA Widegren and TJ Bruno, "Enthalpy of adsorption for hydrocarbons on concrete by IGC" *Journal of Chromatography A*, 1218(28): 4474-4477 (2011).

E Csiszar and E Fekete, "Microstructure and surface properties of fibrous and ground cellulosic substrates" *Langmuir*, 27(13): 8444-8450 (2011).

JC Moise, F Mutelet, JN Jaubert, LM Grubbs, WE Acree, and GA Baker, "Activity coefficients at infinite dilution of organic compounds in four new Imidazolium-based ionic liquids" *Journal of Chemical and Engineering Data*, 56(7): 3106-3114 (2011).

BB Hole, DS Keller, WM Burry, and JA Schwarz, "Surface energetics of bone mineral and synthetic hydroxyapatite using IGC" *Journal of Chromatography B*, 879(21): 1847-1850 (2011).

PM Carmona-Quiroga, J Rubio, MJ Sanchez, S Martinez-Ramirez, and MT Blanco-Varela, "Surface dispersive energy determined with IGC-ID in anti-graffiti-coated building materials" *Progress in Organic Coatings*, 71(3): 207-212 (2011).

P Wu, SH Qi, NL Liu, KQ Deng, and HY Nie, "Investigation of thermodynamic properties of SIS, SEBS, and Naphthenic

oil by IGC" *Journal of Elastomers and Plastics*, 43(4): 369-386 (2011).

J Samuelsson, T Undin, and T Fornstedt, "Expanding the elution by characteristic point method for determination of various types of adsorption isotherms" *Journal of Chromatography A*, 1218(24): 3737-3742 (2011).

K Tamargo-Martinez, A Martinez-Alonso, S Villar-Rodil, JI Paredes, MA Montes-Moran, and JMD Tascon, "Surface modification of high-performance polymeric fibers by an oxygen plasma" *Journal of Chromatography A*, 1218(24): 1255-1260 (2011).

A Marciniak, "The Hildebrand solubility parameters of ionic liquids-Part 2" *International Journal of Molecular Sciences*, 12(6): 3553-3575 (2011).

E Kusiak, M Zaborski, and W Baryn, "Lead-free elastomers composites as X-ray radiation-absorbing materials" *Przemysl Chemiczny*, 90(5): 874-877 (2011).

F Sesigur, D Sakar, O Yasa-Sahin, F Kuruoglu, F Cakar, M Mogulkoc, M Caliskan, O Cankurtaran, M Serin, and B Bilgin-Eran, "Electrical and thermodynamic characterization of thermotropic liquid crystal" *Optoelectronics and Advanced Materials-Rapid Communications*, 5(5-6): 572-576 (2011).

## New SMS Publications:

P Miao, M Naderi, M Acharya, DJ Burnett, and J Khoo, "Gas capture and vapour separation by microporous materials" *DVS Application Note 51*.

DJ Burnett, AR Garcia, A Granier, B Pellegrin, and T Nguyen, "Surface energetics measured by IGC to determine the interaction of nanofillers with polymer matrices" Poster presentation at Eurofillers 2011 conference.

## Upcoming Conferences:

**Technopharm Powtech:** Nuremberg, Germany; 11-13 October 2011. Exhibit Booth 9-101.

Oral Presentation: "Introduction to the iGC-SEA and Surface Energy Heterogeneity"; Wednesday, 12 October 2011 at 11.00 - 11.30 am, in Hall 8.

**MiBio 2011:** West London, UK; 18 October 2011; Exhibitor

**American Association of Pharmaceutical Scientists:** Washington, D.C., USA; 23-27 October 2011. Exhibit Booth 237.

Poster presentations:

**W4254** "Determination of glass transition and crystallization points of lactose as a function of temperature and humidity"

**W4255** "Affect of Processing Route on the Physical Properties of Amorphous Indomethacin"

**W4253** "Using Dispersive Surface Energy and Effective Amorphous Surface Area to Quantify Surface Amorphous Content"

**W4322** "Surface energy distributions and the dissolution rate of aspirin"

**Western Coatings Symposium:** Las Vegas, NV, USA; 24-26 October 2011.

Oral presentation: "Correlating Surface Energy Heterogeneity Measured by Inverse Gas Chromatography to Surface Cleaning Processes"; Tuesday, 25 October 2011; 2:30 – 3:30.

**Powder Flow 2011:** London, UK; 6 December 2011; Poster presentation.

## SMS Training:

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