

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).

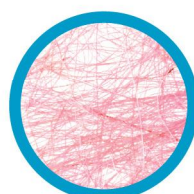
QH Zhang, KLA Chan, GJ Zhang, T Gillece, L Senak, DJ Moore, R Mendelsohn, and CR Flach, "**Raman microspectroscopic and DVS characterization of hydration in collagen and dermal tissue**" *Biopolymers*, 95(9): 607-615 (2011).

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.

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