SP Swedish National Testing and Research Institute, Borås, Sweden (SP)

Expertise and Experience

The SP Swedish National Testing Institute is a state-owned company under the Ministry of Industry. SP is the national institute for technical evaluation, research, testing, certification, metrology and calibration and is working closely with large and small companies, universities, institutes of technology and other organisations. International research and co-operation plays an important role. The number of employees is approximately 540. Roughly 45 % has a Master and/or PhD degree. SP is active in several different areas of technology which also forms the technical departments of SP: Fire technology, building technology and mechanics, energy technology, measurement technology, electronics, chemistry and materials technology, weight and measures and finally certification. SP is appointed as the National Measurement Laboratory for all measurement quantities of the SI system. Employees of SP are frequently used as technical experts by national accreditation authorities and as teachers by universities.

The Department of Chemistry and Materials Technology has specialist knowledge in the investigation of indoor environment and indoor air quality. As a consequence of field studies, SP pursues technical development of sampling and analysis of indoor pollutants and emission testing using environmental and emission chambers. The department operates several indoor environmental chambers and is equipped with a large variety of analytical devices. Two major research areas are of particular interest since a couple of years - adsorption and desorption of chemical species on/from surfaces and the effects of ozone and ozone related atmospheric chemistry in indoor environments. The activities within the department Chemistry and Materials Technology have so far resulted in approx. 20 scientific papers, 50 reports, hundreds of lectures and thousands of client reports. Within Chemistry and Materials Technology R&D is a significant activity and we have experience from several EC projects, and have served as scientific coordinators for such projects. The organisation avails of staff processing expertise in the above-mentioned areas.

Professional Experience

Sarka Langer (PI), Ph.D. and Associate Professor in Chemistry, Research Manager for Chemistry and Materials Technology, and researcher since 10 years in atmospheric chemistry and environmental analysis. She obtained her M.Sc. degree from Charles University in Prague, Czech Republic, 1983, and her Ph.D. in atmospheric chemistry from University of Gothenburg, Sweden, 1995. She spent one year at University of California, Irvine, USA, as a post-doc in atmospheric chemistry. The main line of her work has been (i) chemical reactivity and (ii) determination of kinetic and mechanistic parameters of reactions, both homogeneous and heterogeneous, of atmospheric interest. The last three years she has been involved in R&D on the chemical analysis of indoor air and chemical emissions from building materials. Her research activities have led to 24 publications in peer-reviewed journals. Furthermore, she is a reviewer for several scientific journals.

RECENT/CURRENT EC PROJECTS

CPDW	Development of harmonised tests to be used in the European approval scheme concerning construction products in contact with drinking water (EVK1-CT-2000-00052)

RECENT PUBLICATIONS

Caldwell, T.E., Foster, K.L., Benter, T., Langer, S., Hemminger, J.C., Finlayson-Pitts, B.J., (1999): Characterization of HOCl using atmospheric pressure ionization mass spectrometry, *J. Phys. Chem.* ***A*** **103**, 8231-8238.

Langer, S., Sundahl, M., Lundgren, B., Gårdfeldt, K., Ljungström, E. (1999): Effects of short-lived and reactive compounds on indoor air quality - a study on the formation of peroxyacetyl nitrate from O_3 and NO_2 and organic precursors. *Proc. Conf. on Indoor Air Quality and Climate* **3**, 382-383.

Langer, S., Pemberton, R.S., Finlayson-Pitts, B.J. (1997): Diffuse reflectance infrared (DRIFTS) studies of the reaction of synthetic sea salt mixtures with NO_2: A key role for hydrates in the kinetics and mechanism, *J. Phys. Chem. A* **101**, 1277-1286.

Lundgren, B., Langer, S., Afshari, A., Knudsen, H.N., Ekberg, L. (2003): Air quality in offices, impact of ventilation rate, ozone and limonene, *Indoor Air* (submitted).

Noda, J., Holm, C., Nyman, G., Langer, S., Ljungström, E. (2003): Kinetics of the gas-phase reaction of *n*-C_6-C_{10} aldehydes with the nitrate radical, *Int. J. Chem. Kinet.* **35**, 120-129.

Nyman, G., Langer, S. (2002): Kinetics of the gas-phase reaction of some unsaturated alcohols with the nitrate radical, *J. Phys. Chem. A* **106**, 945-951.

Ullerstam, M., Ljungström, E., Langer, S. (2001): Reactions of acrolein, crotonaldehyde and pivalaldehyde with Cl atoms: Structure activity relationship and comparison with OH and NO_3 reactions, *Phys. Chem. Chem. Phys.* **3**, 986-992.