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Events

NETZSCH-GEFTA special prize 1990 for Dr. Stefan Sarge, Brunswick presented in Karlsruhe on October 4, 1990.

For the first time this year the NETZSCH-GEFTA special prize was awarded. The NETZSCH-GEFTA special prize is awarded to younger colleagues for their original scientific work. The value of this prize is slightly less than that of the standard NETZSCH-GEFTA prize, which has increased somewhat due to the division of the prizes.

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This year the NETZSCH-GEFTA special prize was awarded to Dr. Stefan Sarge, Brunswick.

Dr. Stefan Sarge was born in Wolfsburg in 1959. After doing his military service, he began studying chemistry in Brunswick in 1979 and did his dissertation at the Institute for Physical and Theoretical Chemistry in 1983 on the topic of " Thermomechanical Examination of Organic Relocation Reactions". In 1988 he did his PhD in "Dynamic Calorimetry for the Determination of the Purity of Organic and Anorganic Substances as well as of the Kinetics and Energetics of Elementorganic Relocation Reactions".

After working as a guest scientist in the area of polymer physics in the Department of Calorimetry, Ulm University, Dr. Sarge went on to the University of Queensland in Australia where he worked for one year on a project for the German Research Association. His research in Australia was in the field of liquidus molecules to model membranes.

Since January 1990 Dr. Sarge has worked in the caloric aggregates laboratory at the Federal Physical and Technical Institute in Brunswick and has been researching questions of gas calorimetry (calculation of burning gases), bomb calorimetry, the measurement of the specific heat of solids, liquids and gases as well as general problems, such as the calibration of dynamic calorimeters and their physical and technical basis.

The decision of the GEFTA board is based on Dr. Sarge's work in the field of thermal analysis.

In 1985 Dr. Sarge together with Prof. Cammenga published a paper on the temperature and heat calibration of DSC. Different substances were proposed as calibration materials and compared to established pure metals. The measurements were conducted with two different DSC's, thus obtaining interesting information regarding instrument peculiarities, e.g. the long-term drift of the calibration factor, the dependence of heating rates and, particularly important, systematic differences when conducting a calibration with melting samples and sapphire.

The results and recommendations were less of a decisive factor for the presentation than the way in which the problem was approached, the applied technique of scientific research, which involved a decisive system with an economical range of measurements.

In this thesis "Dynamic Calorimetry for the Determination of the Purity of Organic and Anorganic Substances as well as of the Kinetics and Energetics of Elementorganic Relocation Reactions" Dr. Sarge went into the topic of calorimetry in a systematical approach in so far as he put together and compared different models for the description of a DSC. He developed

an extended R-C model, then determined the model parameters in order to be able to calculate DSC curves with the help of model equations; here the influence of parameter variations were shown in the model. This also serves the purpose of being able to understand fully and optimize real DSC in view of its sensitivity compared to sample and working parameters. Here too, problems of temperature and heat calibration were dealt with systematically and in great detail and verified experimentally be conducting measurements on three different DSC's.

An important aspect of his work is the determination of the calorimetric purity, especially the determination via simulated curve, i.e. they are not curves which one generates without any verification, but there is the following concept:
Out of thermodynamic considerations an enthalpy production of the sample is calculated. With this and the help of the model a simulated curve is obtained, which is then compared to the real curve. The differences that occur are minimized by changing the term of the enthalpy production. When both curves are the same, it is assumed that the right time dependence of the enthalpy production has been found.

A central aspect of this is the determination of kinetic parameters from DSC measurements. This field of thermal analysis is not uncontroversial, there is uncritical application as well as radical disapproval.

Dr. Sarge has determined these kinetic parameters by e.g. relocating organic compounds. Such compounds are used as synthesis units for sila medicine; their effectiveness against illnesses like Parkinson's disease is being tested in laboratories. Emphasis has to be put on the range of problems covered and the care and the intensity with which they have been analysed and dealt with. In an exemplary way Dr. Sarge applied the technique of scientific research to problems in the field of TA, thus proving his extensive knowledge in the field of calorimetry.

The GEFTA board is convinced that Dr. Sarge's work in the field of thermal analysis is a justification for awarding him the NETZSCH-GEFTA special prize 1990. It is a donation by NETZSCH Gerätebau, Selb and is awarded by GEFTA for excellent scientific achievements. We are awarding Dr. Stefan Sarge, Brunswick, this prize.

The prize consists of a certificate and DM 1.000. We congratulate Dr. Sarge and hope that he will continue publishing such high-quality papers in the field of thermal analysis.