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| 13.00 | |
| | »Ontvangst en Registratie |
| 13.30 | |
| | »Opening door Voorzitter VKRT |
| 13.40 | Metten is weten ? als je weet hoe je metten moet! |
| | »Dr.ir. Gert Rietveld |
| Lecture | <p>Metingen zijn cruciaal om de kwaliteit van producten uit de rubber industrie te bepalen. Om zinvolle en betrouwbare test- en meetresultaten te krijgen, is het echter wel belangrijk dat de metingen zelf goed uitgevoerd zijn. Metten is weten, maar alleen als je weet hoe je metten moet!</p> <p>In de presentatie wordt uitgebreid toegelicht wat er komt kijken bij het verkrijgen van een betrouwbaar meetresultaat. Startend bij de vraag ?wat is een meting??, gaan we via onzekerheidsbepaling, productspecificaties, nationale meetstandaarden en kwaliteitssystemen, door tot aan de laatste ontwikkelingen van de internationale kilogram, ?grand K?, bij het BIPM in Parijs.</p> <p>Na afloop van de presentatie zult u beter begrijpen wat er allemaal komt kijken bij een goede meting.</p> |
| 14.20 | Linear and non linear rheological measurements on rubber polymers and compounds |
| | »Thomas Rauschmann |

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| Lecture | <p>With the ever increasing market demand for rubber products, those in compounding and manufacturing are tasked with the challenge of increasing output without sacrificing efficiencies. This naturally increases the requirements of processes such as mixing, extruding, and injection molding in the rubber industry. Many factors contribute to the success or failure of a compound formulation to meet the required processing and performance criteria. The physical and chemical properties of the raw polymer are among the most important, including molecular weight, molecular weight distribution, and the degree of long-chain branching. Rheological characterization is perhaps the most powerful technique for quickly and easily obtaining information about these properties, enabling process/production engineers and compounder's invaluable information about processibility of raw polymers and processed compounds. The talk provides insights into advanced rheological measurements both in the linear viscoelastic regime and in the nonlinear regime and the interpretation of the information from these measurements primarily related to polymer chain architecture.</p> <p>The scope of the talk is to evaluate differences in polymer and rubber compounds based on molecular weight, molecular weight distribution and long chain branching using a rubber process analyzer RPA. In the first step the comparison is done based on a standard frequency sweep using different polymer samples and how differences show up compared to standard tests namely the Mooney Viscosity and the MDR Cure Curve. In the second step the linear and nonlinear response from a standard strain sweep experiment are evaluated for a series of Polymer grades like EPDM and BR with different branching.</p> |
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| 15.00 | Stress relaxation ? stress fall |
| | »Jaap Havinga |

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| Lecture | <p>Stress relaxation is well known to be an important property for sealing applications. Not known widely is that temperature changes might have a large effect on the relaxation. Especially for applications as window seals, but also clamping of hoses, the drop in remaining stress as results of a short period of higher temperatures, can be enough to destroy the sealing capacity completely. In this paper we will discuss this phenomenon and show how it is possible to test on this before a product is used. This is important for rubbers but also (and may be even more) for a lot of thermoplastic elastomers.</p> |
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| 15.40 | |
| | »Pauze |

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| 16.00 | Dynamisch Mechanische Analyse met speciale aandacht voor Hysteresis onderzoek |
| | »dr. Wiebold Wurpts |

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| Lecture | <p>Many applications have high requirements for the mechanical properties of polymers. In order to fulfil these requirements modern material development is in the need for powerful analysis tools.</p> <p>The Dynamical Mechanical Analysis is a flexible and versatile method for characterisation of polymers. Within this talk first the broad range of applications of modern DMA is addressed. DMA devices measure the time, frequency and temperature dependency of mechanical elasticity and damping. Furthermore modern devices allow the measurement of related properties like tackiness, heat build up or even dielectric properties.</p> <p>In this talk special emphasis is put on the hysteresis based evaluation. Within this evaluation method the energy balance of materials is described even for larger strains in the nonlinear material regime. While in classical DMA the sample is excited with a sinusoidal load, in many applications pulsed or generally formed loadings arise. In order to achieve realistic and comprehensive test conditions, these loads should be applied to the sample as well. The hysteresis based approach allows even in this cases an exact characterisation of materials.</p> |
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| 16.40 | <p>Pyrolysis GC-MS for identification and characterization of rubbers used in tires and membrane (diaphragm) pumps</p> <p>»Dr. Michael Soll</p> |
| Lecture | <p>We have developed a vertical micro-furnace pyrolyzer utilizing a free-fall sample introduction mechanism along with various functions such as temperature programmable heating. Frontier Lab pyrolyzer 3030D combined with a GC/MS-system has become one of the most powerful analytical instruments in various fields such as the characterization of synthetic and natural polymers, art dyes and materials, archaeological artefacts, forensic, soil organic matter and biological samples.</p> <p>Here, the system design and system setup is explained, as well as the 4 analytical methods (EGA-MS, TD-GC/MS, Pyrolysis-GC/MS and Heart-Cut GC-MS) for deformation of even complex materials. For identification of the polymers, F-Search is used. F-Search is a database software specifically designed to characterize polymeric materials and additives from pyrograms and EGA thermograms. The core of F-Search is a patented search algorithm that together with specialized Frontier Lab. MS libraries, facilitates the characterization of polymers and additives.</p> <p>Two applications will be presented. In the first example 2 tire samples will be analysed and identified as car tire and bus tire due to their different polymeric composition. Results from EGA-MS (Thermograms) and Pyrolysis GC/MS (Pyrograms) and the comparison with F-Search libraries are presented.</p> <p>The second example is describing a failure analysis report of two membrane pumps samples with different damage history. EGA-MS, Single Shot Pyrolysis and Heart Cut EGA-GC/MS were performed to identify the differences in these two samples. Using F-Search, the comparison of 'good' and 'bad' sample is shown. Beside other unconformities, the absence of Chloropren was the most significant difference in the 'bad' sample.</p> |
| 17.20 | <p>»Aperatief met aansluitend diner</p> |