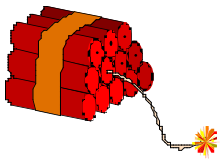

SEKTIONEN FÖR DETONIK OCH FÖRBRÄNNING

The Swedish Section for Detonics and Combustion
affiliated with *The Combustion Institute*
(www.combustioninstitute.org)

NEWSLETTER 2/2014
2014-12-29

SDF going international

Since quite a lot of persons handicapped by not speaking Swedish have expressed their wish to become members of the Section (SDF) – and have been welcomed by their wish being complied with – English has to substitute Swedish as appropriate. Furthermore, the editor expects contributions in English from these new members. In addition to minimizing Swenglish, the newsletters will then widen the horizon and keep all of us well informed. So, newcomers, keep your ink wells and fountain pens filled!

The 15th ”Jan Hansson Symposium”

At the board (VU) meeting 16 May it was decided that the S (Symposium on Chemical Problems Connected with the Stability of Explosives) series shall be continued. S 15 is provisionally planned to start Sunday (arrival) 31 May 2015. A ”First Circular” will be issued when venue and other practical details have been settled.

S 14 took place in 2007 at Örenäs Castle, Scania.

Traditionally, the conference will last for three days, 1-3 June with departure for home the day after.

FN och pågående nedrustningsarbete i en krigsdrabbad värld

I vår omvärld pågår tyvärr många väpnade konflikter där människor utsätts för obeskrivligt lidande, vilket resulterar i stora flyktingströmmar som även når Sverige. Världssamfundet har genom införandet av Arms Trade Treaty (www.un.org/disarmament/ATT/) etablerat en grund för att minska den okontrollerade spridningen av vapen som används vid olika konflikter.

FN har startat ett omfattande arbete genom att föreslå styrande riktlinjer dokumenterade i International Ammunition Technical Guidelines:

www.un.org/disarmament/convarms/Ammunition/IATG/

I kommande nyhetsbrev kommer Sektionen att belysa hur arbetet med nedrustningsarbetet fortskrider och hur Sverige kan bidra till en tryggare värld. Redan idag har alla med tillgång till internet möjlighet att ta del av det omfattande arbetet

Fredsrelaterad Teknik (*Peace-related Technology*) – fortsatt arbete

Initiativtagarna Lars Ingelstam, Bo Janzon, Hans Wallin och Bertil Juhlin har i samverkan med Kungl. Krigsvetenskapsakademin (KKrV) genomfört ett utredningsarbete kring nuläget, behov av samordning och möjligheter för att skapa ett nytt satsningsområde med arbetsnamnet *Freds-*

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relaterad teknik. Resultaten av utredningsarbetet redovisades vid ett välbesökt och mycket uppskattat seminarium på Försvarshögskolan i Stockholm den 8 september 2014.

Nuläget beskrivs i en rapport och en sammanställning över framförda presentationer av Bo Janzon och daterade 2014-09-16 samt en artikel i tidskriften *Rikare Liv*, som finns här:

http://www.rikareliv.info/Seminarium%20Fredsteknik.htm.

Sammantaget kan vi konstatera att området Fredsrelaterad teknik innehåller stora möjligheter att utveckla en humanitär verksamhet men även ett verksamhetsområde för specialiserad kommersiell verksamhet.

Fortsatt arbete

KKrV har tillsatt en arbetsgrupp under ledning av Bo Janzon för att belysa området.
Initiativtagarna föreslår vidare att det snarast:

- Bildas en teknisk expertgrupp för fred bestående av personer med lång erfarenhet från arbete med vapen, ammunition och explosivämnen.
- Expertgruppen får i uppdrag att söka samarbete med FNs IATG och Safer Guard.
- Expertgruppen skall översiktligt sammanställa den relevanta erfarenhet och kunskap som finns i Sverige kring militära lämningar, deras återvinning och kartläggning av miljöfaktorer.
- Expertgruppen skall skapa och sammanhålla ett nätverk av personer, företag, organisationer och högskolor som kan utveckla spetsteknik inom fredsområdet. Som bas för arbetet används Sektionen för Detonik och Förbränning (SDF) och det nätverk och den erfarenhet som finns i Sektionen. Sektionens hemsida skall stödjas.
- I samverkan med SDF skall en världskonferens kring fredsteknik arrangeras under 2015.
- Expertgruppen skall stödja bildandet av en ”Fredsindustriförening”.

För att ovanstående förslag skall kunna genomföras krävs starkt politiskt stöd från rikets styrande samt att medel anvisas.

AGW

Under this heading, spelled out as Anthropogenic Global Warming, views on and discussion about hypotheses concerning effects and their causes related to the global climate are solicited.

The dominating hypothesis is that the cause of actual weather-related catastrophic events worldwide is an alleged 50 percent increase of the carbon dioxide content in the air.

In a second step this increase (from ca. 280 to 400 ppm in the previous century) is said to be caused by fossil fuel combustion.

The third effect-and-cause step is that the parallel temperature increase is caused by the CO_2 increase.

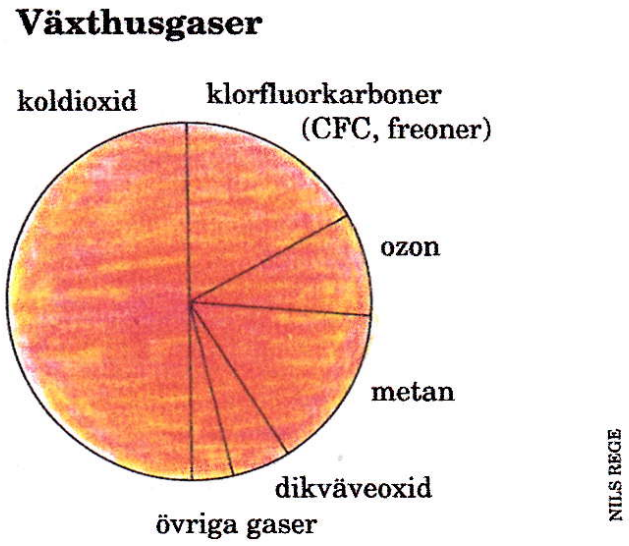
The fourth, finally, is that the climate change is caused by increasing temperature (mere $\Delta T = = + 0.8$ K in the previous century – no uncertainty value seems to have been reported). It goes without saying that CO_2 producers like us, SDF members as we are, have reasons to critically examine the cause-and-effect sequence described, and, furthermore, take active part in unbiased scientific evaluation. In Newsletter 3/2013 (2013-09-22), the following crucial questions were asked for purpose of helping to structure a truly scientific discussion:

1. It is often maintained – and taught even at university level – that CO_2 is the most important greenhouse gas (see the diagram below, were we are told that CO_2 is responsible for 50 % of the greenhouse effect. The article is signed by Prof. Bengt Hubendick, Chalmers University of Technology, CTH). The question “where does 50 % come from?” got no answer, but a member comment (Newsletter 3/2013) ran: water vapour accounts for 95 %, CO_2 for 1.5 %.
   [A CTH research project under the title “Chalmers vs CO2” is described here:

www.chalmers.se/en/areas-of-advance/cases/Pages/Chalmers-vs-CO2.aspx.]

2. In many – even peer reviewed – articles it is maintained that CO_2 is an *air pollutant*. How can this apparently contradictory statement be in accordance with the fact that this photosynthesis-gas stands for the maintenance of life?
3. Mathematical models is an important tool for studying effect-and-cause relations. It is an inescapable scientific condition, though, that an error calculus is made and reported together with the results. Has this been done? Is modelling really meaningful for such a complex system as the climate?
4. "Natural causes" (sun spot activity, for example) is an obvious first choice as to hypotheses about climate phenomena. Has this been done? If so, where are reports to be found and on what grounds have they been abandoned?

(Fred Goldberg's comments to all these questions are to be found in Newsletter 3/2013. pp. 5-8.)



Fördelningen av olika växthusgasers värmehöjande effekt i atmosfären. Även om t.ex. freoner förekommer i relativt små mängder blir effekten av dem hög, eftersom de kan absorbera upp till 7 000 gånger mer värme än koldioxid i samma mängd.

6th Symposium on Energetic Materials and Insensitive Munitions

This national symposium took place in Chengdu, China, 20-23 November 2014. Of the 496 papers presented, the following were provided with English abstracts:

- Computational Study on Molecular Design and Performance Prediction of Nitro Guanidine Compounds.
- - Synthesis, Characterization and Crystal Structure on an Energetic Cycle Furazan Ether Trifurazanooxacycloheptatriene.
- Preparation Technology Research of Special CL-20.
- Synthesis and Characterization of Trinitroethyl Compounds Derived from Furazan.
- Self-Assembly in Low Temperature Crystallization Octogen.
- Study on the Fiber Toughened 123 Resin Used in Thermoset PBX.
- Preparation and Characterization of AP/Al(Fe_2O_3 Nanocomposite Energetic Materials.
- Optimization and Sensitization Research of $[Cu(NH_3)_4]ATZ{\cdot}2H_2O$.
- Study on the Preparation of 1,1-Diamino-2,2-dinitroethylene with High Security.

- Recrystallization and Properties of 2,6-Diamino-3,5-dinitropyridine.
- Theoretical Study on the Structure and Stability of [1,2,5] Oxadiazolo [3,4-e] [1,2,3,4]--Tetrazine-4,6-Di-N-Dioxide (FTDO). *Full 6-page paper*.
- The Research and Application Progress of Nano-metals and Their Compounds in Propellant.
- Research and Casting Process of PBX Explosive Based on HTPB.
- Synthesis, Crystal Structure and Themal Decomposition of (AG)(H_2TNPG).
- Molecular Dynamics Simulation of HNIW/GE Composite at Different Temperatures.
- The Synthesis and Thermal Decomposition Kinetics of TACOT.
- Synthesis and Crystal Structure of 3,4-Bis (3-chlorodinitromethyl furazan-4-oxy)furazan.
- Two Explosives Based on 1,2-Dinitroguanidine: Synthesis and Thermal Properties of ADNQ and APX
- Synthesis of 3,5,3´5´-Tetranitro -4,4´-bi-1,2,4-triazole.
- Application of Supercritical Fluid CO_2 in Energetic Materials Refining and Coating.
- Facile Fabrication of Porous CL-20 for Low Sensitivity High Explosives.
- Effect of Yttrium Doping on Microstructure of Second Phase in V-5Cr-5Ti Alloy.
- Introduction and of First Principle Software HASEM for Energetic Materials.
- A Brief Analysis of Manufacturing Process for Polymer Bonded Explosive (PBX).
- The Requirements of Insensitive Munitions and Design Techniques.
- Study on Test Method and Evaluation Procedure of Low-vulnerability Properties for Solid Propellant.
- Damage Effects of Chaped Charge Comprised of Reactive Materials Liner to the Steel Target.
- The Pressing Properties Study of a TATB based Aluminized PBX Explosive.
- Healing Effect on PBX Damage by Thermal-Pressure Aging Treatment.
- The Effect of Flyer Structure on Energetic Efficiency in Laser-driven Flyer Priming System.
- Electrostatic Study of Two Types of Bridge Wire Detonators.
- QMU. A Kind of New Reliability Certification Method of Products, Facilities and Systems.
- A Preliminary Study on the HTPB-isocyanate Binder System Curing at Room Temperature.
- An Experimental Research on Cutting Formation of Explosive Simulants.
- Study on Detonation Propagation Behavior of RDX Explosive Circuits Charging by Hydraulic Forming Technique.
- Research on the Compatibility and Mechanical Properties of Elastomers of HTPE.
- Analysis of Naval Munitions Warhead Insensitivity Technology.
- The Influence on CL-20 Content on the Energy and Security Performance of Aluminized Explosives.
- Preparation and Characterization of Refinement HMX with Characteristics.
- Study on Safety of AlH_3/GAP/NG/BTTN System.
- The Research on the Effect of Temperature on Desensitized RDX-TNT-Al Explosive.
- Initiation Technique on Carbon Crystal Electric Ignition Bridge.
- The Forecast of Multilayer Cylindrical Shell Gap.
- Review of Mitigation for Pressure and Thermal Threats Using Devices.
- Study on the Effect of Metal Ion on the Crystallization Characteristics and Thermal Properties of doped-HMX.
- Research on Charge Density Effect of RDX/TNT Fused Cast Explosive with Different RDX Particle State.
- Research on Interfacial Adhesion of HTPB Casing PBX Explosive used BEBA.

- Studies on the Safe Synthetic Craft and Performance of High-Performance Oxidizer: Hydrazinium Nitroformate (HNF).
- Study on the Influencing Factor of Migration of Plasticizer in End-burning Propellant.
- The Effect on DNTF in High Temperature Accelerated Aging Process.
- Thermal Shock Resistance on TATB-based Polymer Bonded Explosive and Its Styrene Copolymer Modified Formulation.
- The Effect of Three-Dimensional Hierarchically Ordered Macro-Mesoporous Carbon on the Thermal Decomposition of CL-20.
- Study on the Properties of TATB Based PBX Under Mechanical Stress Undergoing High Temperature Accelerated Aging Test.
- Effect of Elasticity and Toughness on Impact Sensitivity of Modified Composition B.
- A New Kind of Network With Booster Performance Research.
- Experimental Research on Energy Output Characteristics for Underwater Explosion of Two Explosives.
- Research on the Thermal Decomposition Kinetics and Sensitivity of the Idiosyncratic HMX.
- Energy Characteristics of CMBD Propellants Containing 2-Nitroimino-5-nitro-hexahydro-1,3,5-triazine (NNHT).
- The Mechanism of Thermal Decomposition of HTPE Binder and its Effect on the Thermal Decomposition Characteristics of AP.
- An Investigation on Impact Sensitivity and Thermal Safety of AlH_3 System.
- Study on Assessment Method Simulation Base on Trendline Analysis of Initiator's life.
- Thermal Analysis on Compatibility of AlH_3 with Propellants Components.
- Hydrothermal Synthesis and Catalytic Properties of Cerium Benzene-1,3,5-tricarboxylate Complexes.
- The Research on Relationship Between the Property of Polycrystalline LiH and Particle Size.
- Study on the Storage Life of HMX Based PBX Explosive and Its Compatibility With Polyurethane Based on Time-Temperature Superposition Principle.
- Structures of Unidirectional/Bidirectioal Warm Compaction of TATB Granules and Acoustic Property.
- A preliminary Study on the Degradeable Performance of Hydroxyl-terminated Polyether-ester Propellant.
- Cook-off Characters and Thermal Reaction Calculation of Casting Mixed Explosives.
- An Investigation of Energetic Material Micro-Structure Analysis by the Small Angle Scattering,
- X-ray Microtomography of TATB Granules Under Sostatic Warm Soft Compaction.
- Ultrasensitive Detection of Explosives by Surface Enhanced Raman Spectroscopy.
- Experimental Observations of Ignition in RDX Granular Explosives Subjected to Drop-weight Impact.
- Measurement of DBP Content of an Insensitive Explosive by NIR Diffuse Reflectance.
- Study on Estimation Accuracy of the Interval Estimation Method for Up-and Down Sensitivity Test Data.
- Study on Energy Evaluation Test Methods of Casting PBX.
- Shock Initiation Characteristics of Boosters Effect by Short Duration Pulse.
- A Small-angle X-Ray Scattering Study of Micro-Defects in Thermally Treated HMX--PBX.
- Continuous Detonation Velocity Measurement Using Embedded Fiber Probe.
- Relative Material Lined Charge Power Influenced by Charge-Length.
- Rapid Measurement Study of NC Ingredient in a Military Composite Explosive by Near-Infrared Spectroscopy Technology.

- Research and Exploration on the Method of DNAN Analysis.
- Detonation Temperature Measurement of Explosives Using Dual-line Emission Spectroscopy.
- Numerical Simulation on the Initiation Capability of Detonation Shock Wave Attenuated by Materials Gap.
- A New measurement of Parameters Distribution in High Voltage Discharge Circuit.
- Transient State Analysis of EFI at High-voltage Charging Starting.
- Detonation Pressure Measurements on TA01.
- Magneto-Hydrodynamic Calculation of Magnetic Flux Compression by Liner Driven by Explosion.
- Simulation Study of Shock Initiation of Double-shell Charge Structure by Fragments.

If you are interested in any of the papers, the secretary (who, by the way, began the symposium by talking about 美国燃烧研究所瑞典分部) will be happy to mail scanned abstracts on request.

Kalendarium, konferenser

2014

02-01--04 41st Annual conference on explosives and blasting technique. New Orleans, LA, USA. www.isee.org.

06-18--21 41th International Pyrotechnics Seminar. and EUROPYRO 2015. Toulouse, France. Information: europyro2015@af3p.org. Deadline for abstracts: 2015-01-09.

06-07--11 9th Mediterranean Combustion Symposium. Rhodos, Greece. www.mcs-2015.org.

06-23--26 46th International Annual Conference of the Fraunhofer ICT. Themes: *Energetic materials. Performance, Safety and handling/use.* Karlsruhe, Germany. www.ict.fraunhofer.de.

06-28--07-01 5th International Workshop on Model Reduction in Reacting Flows. Spreewald, Germany. www.modelreduction.net. See Appendix I and IWMRRF_flyer_2015.pdf attached to the covering letter.

Utbildning

Sverige

Kompetenscentrum för energetiska material (KCEM)
För information om kurser, möten, seminarier och konferenser, gå in på www.kcem.se.

EUExcert
Aktuell information om EUExcert finns på webbplatsen www.euexcert.org.

FOI
Kurs i Explosivämneskunskap.
Del 1. 16-20 mars 2015
Del 2. 13-16 april 2015.
Plats: Körunda Konferenshotel samt FOI Grindsjön.
Kursavgift: SEK 42 000.
Anmälan: Sofia Sandström, tel. 08-5550 4094 senast 2015-02-06.

MSB – Myndigheten för samhällsskydd och beredskap.
www.msb.se. Telefonväxel: 0771-240240.

UK

För att få veta vad som tilldrar sig i UK kan man besöka den brittiska sektionens webbplats: www.combustion.org.uk.

University of Leeds, Leeds
Website: www.engineering.leeds.ac.uk/short-courses/.

The Royal Military College of Science, Cranfield University (Defence Academy of the United Kingdom).
Website: www.rmcs.cranfield.ac.uk

USA

Franklin Applied Physics. www.FranklinPhysics.com.
Under the heading "Upcoming meetings" in the institute's newsletter (47-10)2014, the following information is given:
"Make your plans now to attend I**SEE's 41st Annual Conference on Explosives & Blasting Technique**. You can register online, where conference information is accessible 24 hours a day. This conference ..... also includes two popular events on the morning of 1 February: a regulatory issues panel discussion and the Blasters R Us Video Roundup. The **Blasters Weekend Package**, 31 January to 1 February (Saturday and Sunday), is designed for the blaster who must be back on the job on Monday morning; it includes the Sunday events plus the Blasters Training Seminar and receptions."
Note: The previous three-day **Electroexplosive Device Training Course** is no longer being offered on schedule, but it can provided at your location, or we can tailor a course to your company's specific needs. Franklin Applied Physics for details.

Appendix I.

Spreewald

The Spreewald (German for "Spree Woods"; in Lower Sorbian: Błota) is situated about 70km south-east of Berlin. It was designated a biosphere reserve by UNESCO in 1991. It is known for its traditional irrigation system which consists of more than 200 small channels (called "Fließe"; total length: 1,300 km) within the 484-square-kilometre (187 sq mi) area. The landscape was shaped during the ice-age. Alder forests on wetlands and pine forests on sandy dry areas are characteristic for the region.
It is a recreation famous for outdoor activities such as canoeing and bicycling trips. One can also find different spa resorts and even a 'tropical paradise'-themed indoor holiday re-sort located in a 100m high hangar.
The center of Berlin can be reached by a direct train.

Brandenburg University of Technology

The Brandenburg University of Technology was founded in 1991 and is the top technical university in state Brandenburg, Germany. In 2013, the University had 227 professors, 771 academic staff and 9,540 students, of which 1,600 are of foreign origin from over 100 nations.
The chair of Thermodynamics/Thermal Process Engineering develops detailed and reduced chemical mechanisms for reacting flows.
This biennial workshop brings together international experts on the theory and application of model reduction techniques in reactive flows. The objective of the workshop is to promote discussion and exchange of information among experts in this technical area, thereby promoting the advance of knowledge as regards the development of effective methods for model reduction in reacting flow.

Theoretical Foundations

Theoretical foundations of model reduction techniques, including definitions of slow, fast invariant manifolds and related subjects.

Mechanism Simplification

Chemical kinetic mechanisms simplification.

Model Reduction in ODE's, DAE‘s and PDE's

Computational Tools

Computational tools to analyze numerically generated reacting flows.

Applied Engineering*

* Additional topic

For details visit:

www.modelreduction.net

SPREEWALD / BERLIN
BTU
TOPICS