

# 11<sup>th</sup> International Heat Flow Calorimetry Symposium on Energetic Materials (HFCS-EM)

## Symposium co-chairs

Dr. Manfred A. Bohn and Moritz Heil

## Program

Oral and poster presentations  
Date: 12 May 2019

## Sponsors of the 11<sup>th</sup> HFC-Symposium



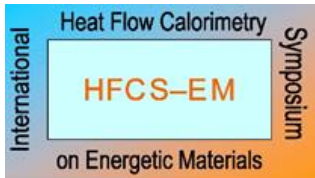
TA Instruments, Eschborn, GE  
Newcastle, USA



Fraunhofer ICT, Pfinzal, Germany

## Venue

Fraunhofer Institute for Chemical Technology (ICT)  
Joseph-von Fraunhofer-Strasse 7  
D-76327 Pfinztal-Berghausen  
Germany



## List of exhibitors

### **NETZSCH Geraetebau**

Wittelsbacherstr.42  
D-95100 Selb  
Germany

### **TA Instruments–Waters LLC**

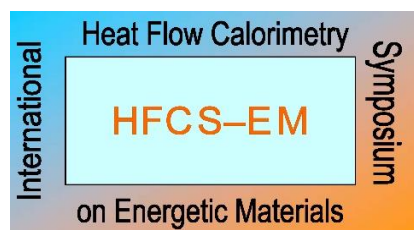
Helfmann-Park 10  
D-65760 Eschborn  
Germany

### **Thermal Hazard Technology - THT**

1 North House, Bond Avenue  
Blechley MK1 1SW  
UK

### **Fraunhofer Institute of Chemical Technology (Fraunhofer ICT)**

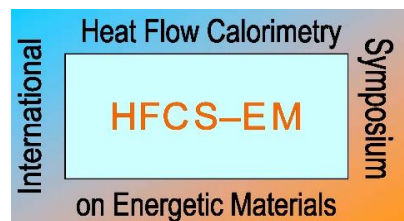
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11<sup>th</sup> International Heat Flow Calorimetry Symposium on Energetic Materials - HFCS-EM

Date May 13<sup>th</sup> to 16<sup>th</sup>, 2019  
 at Fraunhofer ICT, Pfinztal-Berghausen, Germany

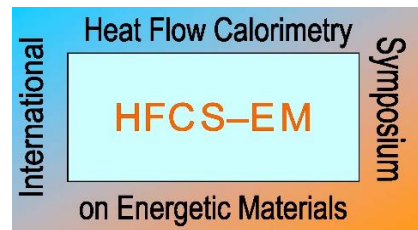
	Monday, May 13		Tuesday, May 14	Session		Wednesday, May 15	Session		Thursday, May 16	Session
			11			8			7	
		08:30	Bus departs from Achat hotel to ICT		08:00	Bus departs from Achat hotel to ICT		08:20	Bus departs from Achat hotel to ICT	
		08:40	Registration		08:25	Organisational remarks		08:55	Organisational remarks	
17:00-19:30	Registration	09:20	welcome addresses Sara Pliskin, Ryan Ubelhor co-presidents of Symp. Committee Manfred Bohn		08:30	Ruth Tunnell, QinetiQ, UK A simple question with complex answers - is nitroglycerine compatible with boron potassium nitrate?	Applying HFC Chair: R. Ubelhor	09:00	Manfred Bohn, ICT, GE Assessment of ageing state of several db propellants	Double base propellants Chair: M. Ramin
	at Hotel Achat Plaza,	09:40	Nigel Rutter, DOSG, UK Defining the UK methodology for the stability testing of energetic materials	Chair: M. Bohn	09:00	Alan Macdonald, AWE, UK Method to perform microcalorimetry measurements of carbon dioxide adsorbing onto ceria nanopowders		09:30	Lee Goetz, BAE Systems, USA Assessment of ageing of two developmental db propellants	
	Karlsruhe (KA)	10:10	Coffee break [Symposium group photo, or 12:30]		09:30	Amanda Catherall, BAE Systems, UK HFC studies of conventional and novel energetic materials		10:00	Ryan Ubelhor, US-Navy Crane, USA Heat Flow Calorimetry of 70mm Double Base Solid Rocket Motors	
		10:30	exhibitor short presentation Netzsch TAI, THT, ICT	Chair: H. Schimansky	10:00	Alan Macdonald, AWE, UK An investigation into PETN acidity using HFC		10:30	Coffee break	
18:00	Welcome buffet	11:00	Malin Suurkuusk, TA instruments, SE New accessories and tools for TAM	Instrumental develop- ment 1 Chair: H. Schimansky	10:30	Coffee break		11:00	Elena Moukhina, Netzsch, GE Selection of experimental conditions and kinetic methods	DSC and thermal load Chair A. Macdonald
20:30	End of the day	11:30	Ryan Ubelhor, US-Navy Crane USA Heat Flow calorimetry and NSWC Crane		11:00	Arcady Kossoy, CISP, RU Kinetics-based simulation of thermal explosion - some examples of experimental validation	Methodo- logy Chair: M. Heil	11:30	Arcady Kossoy, CISP, RU Effect of peculiarities of DSC experiment in correctness of the kinetics created	
		12:00	Moritz Heil, ICT, GE Evaluation of high temperature ageing of a solid gas generant	Modelling Chair: M. Bohn	11:30	Michael Ramin, NC Wimmis, CH Blank determination in heat flow calorimetry		12:00	Virginie Le Gallo, CEA-DAM Gramat, FR Controlled thermal test on high explosive cylinders	
		12:30	[Symposium group photo, or 10:25] Lunch break ICT cafeteria		12:00	Manfred Bohn, ICT, GE A way to improve the safe use of closed stainless-steel ampoules		12:30	tbd	



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 Fraunhofer ICT, Pfinztal-Berghausen, Germany

	Monday, May 13		Tuesday, May 14	Session		Wednesday, May 15	Session		Thursday, May 16	Session
		13:30	Bertrand Roduit, AKTS, CH Thermal behaviour of quasi-autocatalytic decomposing solids	<b>Modelling</b> Chair: <i>M. Bohn</i>	12:30	Ryan Ubelhor, US-Navy Crane, USA Heat flow calorimetry: Innovations for test and evaluation of high energy systems		13:00	<b>Closing remarks &amp; Lunch break ICT cafeteria</b>	
		14:00	Bertrand Roduit, AKTS, CH Contin. monitoring of shelf lives by applic of data loggers with implem. kinetic parameters		13:00	<b>Lunch break ICT cafeteria</b>		14:30	<b>End of the symposium &amp; Bus to KA</b>	
		14:30	Fabio Visentin, Mettler, Toledo CH Scale up from Lab to Plant with non-isothermal reactions using Reaction Calorimetry	<b>Instrumental development 2</b> Chair: <i>tbd</i>		<b>offsite networking</b>				
		15:00	Jürgen Antes, ICT, GE Reaction calorimetry in flow reactors - fast reaction screening and process design		14:10	<b>Bus departs to excursion</b>				
		15:30	<b>Coffee break</b>							
		16:00	Arcady Kossoy, CISP, RU Applying adiabatic calorimetry for study of energetic materials - is it possible?	<b>adiabatic self-heating, ARC</b> Chair: <i>R. Tunnell</i>	15:15	<b>Visit of UNESCO World Heritage site Cistercian Monastery Maulbronn guided tours in GE and English</b>				
		16:30	Manfred Bohn, ICT, DE Kinetics of thermo-chemical decomposition of RDX in cyclohexanone and $\gamma$ -butyrolactone		16:30					
		17:00	Martyn Ottaway, THT, UK Ultra-high sensitivity ARC testing a link to STANAG 4582 testing		17:00	<b>coffee and cake on terrace of Ravensburg, Sulzfeld</b>				
		17:30	<b>End of the day</b>		18:00	<b>Symposium dinner, Ravensburg</b>				
		17:40	<b>Bus departs to hotel, KA</b>		21:30	<b>Bus departs to hotel, KA</b>				



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<b>Poster</b>
<b><u>Arcady Kossoy</u>, P Grinberg, O. Antonov</b> Kinetics-based simulation of thermal explosion - some examples of experimental validation
<b><u>Ryan Ubelhor</u>, Daniel Ellison, Cassie Hopkins</b> Heat flow calorimetry: Innovations for test and evaluation of high energy systems
<b>Manfred A. Bohn, <u>Heike Pontius</u></b> Thermal behaviour of energetic materials in adiabatic selfheating