Fraunhofer ICT

Program

Ensuring Supply Security
in a Changing World

# Energetic Materials – From Simulation and Synthesis to Application

**55th International Annual Conference of the Fraunhofer ICT** combined with the **49th International Pyrotechnics Society Seminar**

**June 23–26, 2026**
**Convention Center, Gartenhalle**
**Karlsruhe, Germany**





# Introduction

The Fraunhofer ICT International Annual Conference serves as a forum to discuss the current state of the art, to present new methods, ideas, and research results and to further improve scientific understanding in the field of energetic materials. Join our conference to benefit from a platform for lively discussions, detailed exchange of scientific results and – most importantly – for networking with international experts.

In the light of recent global challenges, the advancement of simulation, synthesis, and processing techniques for energetic materials has become crucial. This conference aims to promote innovative research and practical solutions that advance the development of novel energetic materials and formulations while ensuring excellent performance and applicability.

The focus will be on innovative materials, designs and manufacturing concepts for energetic materials. Additionally, the integration of advanced simulation techniques for modeling and predicting the behavior of energetic materials and formulations throughout their lifecycle will be highlighted. Researchers are encouraged to present their findings on cutting-edge synthesis techniques, formulations and advanced processing methods that optimize both material properties and process efficiencies. The 55th International Annual Conference of Fraunhofer ICT offers an exceptional opportunity for collaboration and knowledge exchange among experts in the field of energetic materials, addressing current challenges in simulation, synthesis, production, and performance.

By fostering innovative solutions and facilitating discussions on new methods and trends, the conference creates a dynamic environment for engagement. In particular, it provides young scientists and early-career researchers with the chance to present their work and expand their international network of professionals.

This year, the renowned **International Pyrotechnic Society Seminar**, with its **Chairman Dr. habil. Ernst-Christian Koch**, will be taking part in the event with its 49th edition. The program also includes a session on the topic of munitions in the sea. Both topics complement the 55th ICT Annual Conference well, and we look forward to a mutually enriching exchange within the communities.

**Chairmen of the Conference**
**Dr. Sebastian Wurster, Dr. Uwe Schaller**
Spokesmen for Explosives Technology, Safety and Security
Fraunhofer ICT, Pfinztal, Germany

# General Information

### Registration

- Register online: www.ict.fraunhofer.de/annualConference
- Registration fee complete conference (incl. proceedings, coffee breaks, lunch): **€ 1050,--**
- Registration fee only part "Munitions in the sea" (incl. proceedings, coffee breaks, lunch Thursday and Friday): **€ 500,--**
- Participation cannot be guaranteed for registrations arriving after June 16th, 2026. The fee has to be paid **upon receipt of the invoice** by bank transfer.

### Cancellation Policy

- **€ 500,--** will be charged for cancellations after June 15th, 2026. **No-shows** will be charged the whole fee.

### Accommodation

- Online, see www.ict.fraunhofer.de/annualConference

### Conference Office

- Foyer of the GARTENHALLE
- Open from Tuesday, June 23, 16.00 h till Friday, June 26, 14.00 h **during the Conference** and may be reached by Phone +49-(0)7 21 / 37 20 - 6000

### Check in / Welcome Reception

- Please check in at the Conference Office on **Tuesday, June 23, between 16.00 and 20.00 h**.
- All participants are cordially invited to the **Welcome Reception** on the same day, starting at **18.00 h** in the foyer of the GARTENHALLE.

### Conference Language

- English

### Get-together (Thursday, June 25)

- The Fraunhofer ICT can be visited on **Thursday, June 25** in the evening. There will be a **Get-together Party** with draught beer, barbecue and live broadcast of the FIFA World Cup match Ecuador vs. Germany (10 p.m.). Please **mark on your registration form** whether you wish to participate.
- Transportation: Bus shuttle Convention Centre Karlsruhe – Fraunhofer ICT and back

### Chairmen 55th International Annual Conference of the Fraunhofer ICT

- Dr. Sebastian Wurster, Fraunhofer ICT, D
- Dr. Uwe Schaller, Fraunhofer ICT, D

### Chairman 49th International Pyrotechnics Society Seminar

- Dr. habil. Ernst-Christian Koch, Lutradyn, D

### Program Committee

- Dr. Thorsten Kiefer, JPl Oceans, D
- Prof. Dr. H.S. Udaykumar, University of Iowa, USA
- Dr. Magda Rusan, Ludwigs-Maximilian Universität, D
- Prof. Dr. Thomas Klapötke, Ludwigs-Maximilian Universität, D

### Exhibiting companies

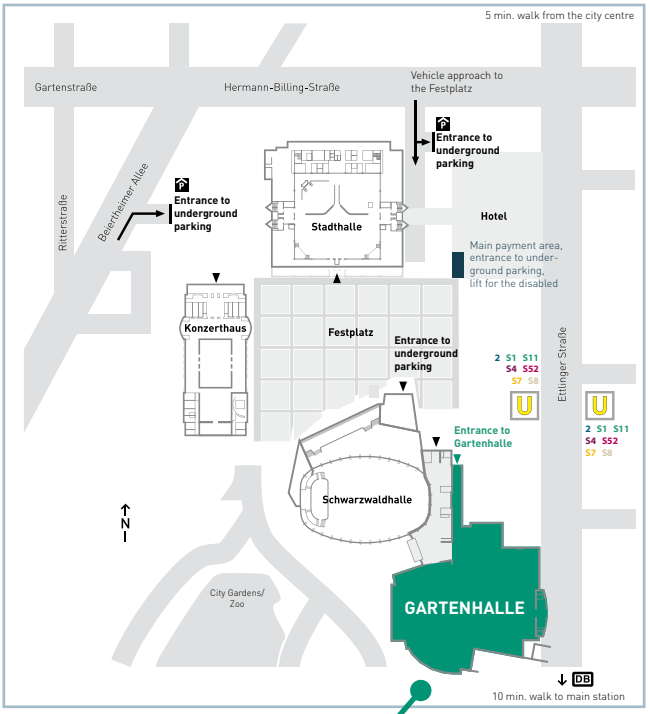
- Anton Paar Germany GmbH, Ostfildern, D
- Dr. Krause GmbH, Potsdam, D
- iTecSwiss AG, Zeiningen, CH
- Propex Technologies GmbH & Co. KG / IKA-Werke GmbH & Co. KG, Staufen, D
- Resodyn Acoustic Mixers Inc., Butte, USA
- Specialised Imaging UG Deutschland, Fürstenfeldbruck, D
- Teledyne GmbH, Heidelberg, D

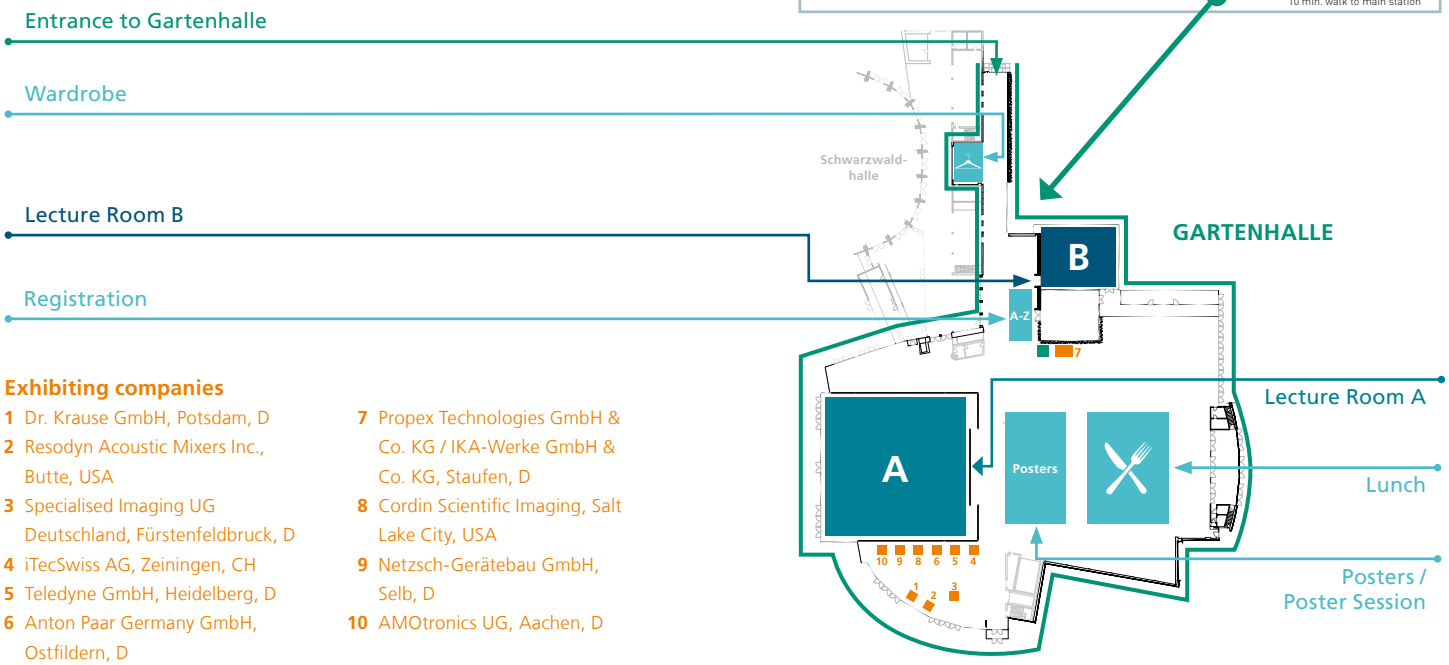
# How to find the venue

Karlsruhe is located 120 km south of Frankfurt (Main)/Frankfurt International Airport just beside the Autobahn A5, and is also connected to Frankfurt via the Intercity Express Train ICE. Additional airports are: Strasbourg (F) (approx. 100 km) and Stuttgart (D) (approx. 90 km).

By car: Coming from the A5/A8, please take exit no. 45 "Karlsruhe-Mitte" in the direction of Karlsruhe. Leave the B10 in the direction of "Stadtmitte/Zentrum". Coming from the A65 or B10, please take exit no. 2 in the direction of "Kongresszentrum". Follow the signs for "Kongresszentrum".

Address:
Congress Center Karlsruhe, Festplatz 9, 76137 Karlsruhe, Germany




## Exhibiting companies

1 Dr. Krause GmbH, Potsdam, D
2 Resodyn Acoustic Mixers Inc., Butte, USA
3 Specialised Imaging UG Deutschland, Fürstenfeldbruck, D
4 iTecSwiss AG, Zeiningen, CH
5 Teledyne GmbH, Heidelberg, D
6 Anton Paar Germany GmbH, Ostfildern, D
7 Propex Technologies GmbH & Co. KG / IKA-Werke GmbH & Co. KG, Staufen, D
8 Cordin Scientific Imaging, Salt Lake City, USA
9 Netzsch-Gerätebau GmbH, Selb, D
10 AMOtronics UG, Aachen, D

# Tuesday, June 23

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|---|---|
| 16.00-20.00 | **Check-in** |
| 18.00-20.30 | **Welcome Reception** |

# Wednesday, June 24

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| 09.00 | **WELCOME AND OPENING**<br>U. Schaller<br>Fraunhofer ICT, Pfinztal, D<br>S. Wilker<br>BAAINBw, Koblenz, D<br>E.-C. Koch<br>RPTU Kaiserslautern / Lutradyn Energetic Materials, Kaiserslautern, D | |
| | **KEYNOTE-SESSION I**<br>**Chair:** U. Schaller, Fraunhofer ICT, D | |
| 09.20 | **K1** **KEYNOTE BY EUROPEAN COMMISSION**<br>European Commission, Brussels, BE | |
| 09.50 | **K2** **KEYNOTE BY MUNITIONS SAFETY INFORMATION ANALYSIS CENTER (MSIAC)**<br>MSIAC, Brussels, BE | |
| 10.20 | **Coffee break** | |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | SESSION A1<br>**FLOW AND CRYSTALLIZATION CHEMISTRY**<br>**Chair:** H. Östmark, FOI, SE | SESSION B1<br>**THERMITES AND REACTIVE COMPOSITES**<br>**Chair:** S. Date, National Defense Academy of Japan, JAP |
| 11.00 | **A1** **THE APPLICATION OF IN SITU PROCESS ANALYTICAL TOOLS FOR THE DEVELOPMENT AND OPTIMIZATION OF CONTINUOUS FLOW PROCESSES**<br>E. D. Gauthier, A. J. Paraskos, B. Diallo, J. Laquidara<br>US Army DEVCOM, Picatinny Arsenal, USA | **B1** **PARAMETER MODULATION OF ENERGETIC COMPOSITES: FIRST STEPS TOWARDS CONTROLLABLE DETONATING PERFORMANCES**<br>H. Dehlinger, R. Pauchet, M. Comet<br>ISL, Saint-Louis, F |
| 11.20 | **A2** **CONTINUOUS RESONANTACOUSTIC® REACTOR AND CRYSTALLIZER TECHNOLOGIES FOR ENERGETIC MATERIAL SYNTHESIS AND PARTICLE CONTROL**<br>J. Mayne<br>Resodyn Corporation, Butte, USA | **B2** **PYROTECHNIC TRACERS SHED NEW LIGHT ON THE MITHOLZ-EXPLOSION DESASTER**<br>E.-C. Koch<br>RPTU Kaiserslautern / Lutradyn Energetic Materials, Kaiserslautern, D |
| 11.40 | **A3** **SUBLIMATION-CRYSTALLIZATION: A NOVEL PROCESS FOR RECYCLING OF AMMONIUM DINITRAMIDE (ADN) AND PARTICLE PRODUCTION**<br>T. Heintz, W. Reinhard<br>Fraunhofer ICT, Pfinztal, D | **B3** **TWO-DIMENSIONAL ENGINEERING OF METASTABLE INTERMOLECULAR COMPOSITES: SYNERGISTIC ENHANCEMENT OF MECHANICAL STRENGTH AND STIMULUS-SPECIFIC SENSITIVITY X**<br>Jingwei Li, Yurong Liu, Junhong Chen, Xuwen Liu<br>State Key Laboratory of Precision Blasting, Jianghan University, Wuhan, PRC / Hubei Key Laboratory of Blasting Engineering, Jianghan University, Wuhan, PRC<br>Zhichao Zhao, Yihao Shen, Guangyu Yin, Zhangbo Ming<br>State Key Laboratory of Precision Blasting, Jianghan University, Wuhan, PRC |
| 12.00 | **A4** **AMORPHOUS SOLID DISPERSIONS (ASDS) OF SMALL MOLECULE ORGANIC ENERGETICS**<br>M. C. Chandwani, V. Stepanov, R. B. Patel, C. A. Morrison, C. R. Pulham<br>US Army DEVCOM, Picatinny Arsenal, USA | **B4** **DEVELOPMENT OF NOVEL EXTRUDABLE IGNITING COMPOSITION FOR SOLID PROPELLANTS**<br>A. Ujjwal, S. A. Phatak, B. Kumari, S. Rawal<br>HEMRL, Pune, IND |
| 12.20 | **Lunch break** | |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | SESSION A2<br>**SYNTHESIS**<br>**Chair:** T. Klapötke, Ludwigs-Maximilian Universität, D | SESSION B2<br>**PROPELLANTS**<br>**Chair:** S. Wilker, BAAINBw, D |
| 14.00 | **A5** **INVESTIGATION OF ARENE AND HETEROARENE NITRATION SUPPORTED BY HIGH-THROUGHPUT EXPERIMENTATION AND MACHINE LEARNING**<br>T. Kerackian, E. Romero<br>Université Paris Saclay DMTS, Gif-sur-Yvette, F<br>C. Wespiser, M. Daniel, E. Pasquinet<br>CEA DAM, Monts, F | **B5** **EVALUATION OF MECHANICAL, RHEOLOGICAL, THERMAL AND BALLISTIC PROPERTIES OF GAP BASED COMPOSITE SOLID PROPELLANTS**<br>B. Karakaya Yalcin, N. Cagici, E. Cetin, H. Eren Caka, U. Genc, H. E. Can Yolcu<br>Mechanical and Chemical Industry Corporation, Ankara, TR |
| 14.20 | **A6** **A NOVEL ENERGETIC PLASTICIZER BASED ON A TRIOL BACKBONE: SYNTHESIS AND CHARACTERIZATION**<br>J. T. Lechner<br>Fraunhofer ICT, Pfinztal, D | **B6** **ENERGETIC ADDITIVES FOR PROPELLANTS WITH REDUCED ADIABATIC FLAME TEMPERATURES**<br>A. Dejeaifve, R. Dobson<br>Eurenco Clermont, Engis, B |
| 14.40 | **A7** **HIGH-SELECTIVITY SYNTHESIS OF HMX VIA A BIMETALLIC COOPERATIVE CATALYTIC BECHMANN PROCESS**<br>Meng Tang, Yin Wei, Zihao Wang, Long Chen, Jiaxin Liu, Min Shi, Jun Yang<br>Shanghai Institute of Organic Chemistry CAS, Shanghai, PRC | **B7** **IGNITION DELAY PREDICTION OF ADN-BASED ENERGETIC IONIC LIQUID PROPELLANT UNDER APPLIED VOLTAGE**<br>R. Omori, T. Harada<br>Yokohama National University, Yokohama, JAP<br>N. Itouyama<br>Nagoya University, Nagoya, JAP<br>K. Shiota<br>Fukuoka University, Fukuoka, JAP<br>H. Habu, Y.-I. Izato<br>Japan Aerospace Exploration Agency, Sagamihara, JAP |
| 15.00 | **A8** **SYNTHESIS, CHARACTERIZATION AND EVALUATION OF ENERGETIC PROPERTIES OF NOVEL 1,3,4-OXADIAZOLE BRIDGED DIFLUOROAMINOFURAZANS**<br>Yuehui Wang, Yang Chen, Lin Ling, Lele Wen, Long Lu<br>Shanghai Institute of Organic Chemistry CAS, Shanghai, PRC | **B8** **SIMULATION OF MICROSCALE COMBUSTION OF A COMPOSITE ROCKET PROPELLANT**<br>P. Pietrek, M. Moroff<br>Fraunhofer ICT, Pfinztal, D |
| 15.20 | **Coffee break** | |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | SESSION A3<br>**ADVANCED PROCESSING TECHNOLOGIES**<br>**Chair:** A. van der Heijden, TNO, NL | SESSION B3<br>**CHARACTERIZATION**<br>**Chair:** L. Glascoe, Lawrence Livermore National Laboratory, USA |
| 16.00 | **A9** **TAILORING MICROSTRUCTURE AND FOAM STABILITY IN ENERGETIC MONOMER VIA CONTROLLED VAT PHOTOPOLYMERIZATION**<br>E. Caravaca, C. Houthuysen, D. Bird, J. Laquidara, D. Wong<br>US Army DEVCOM, Picatinny, USA<br>F. Berisha<br>Leidos, Dover, USA | **B9** **EXPERIMENTAL INVESTIGATION ON DINA DECOMPOSITION PRODUCTS**<br>J. Ehrhardt, J. Glorian, B. Baschung<br>ISL, Saint-Louis, F |
| 16.20 | **A10** **3D PRINTING OF LOW EXPLOSIVE MIXTURES THROUGH VAT PHOTOPOLYMERIZATION OF POTASSIUM PERCHLORATE/STRONTIUM NITRATE-BASED MIXTURE PASTES**<br>S. Date, M. Ishikawa<br>National Defense Academy, Yokosuka, JAP | **B10** **CYCLED DSC-ANALYSIS OF HNS IN ENERGETIC MELTS**<br>P. Schultz<br>Fraunhofer ICT, Pfinztal, D |
| 16.40 | **A11** **ADDITIVE MANUFACTURING OF SOLID PROPELLANT GRAINS USING UV-CURABLE COMPOSITE PROPELLANTS**<br>H. M. Chabalala, D. Steyn<br>Rheinmetall Denel Munition, Somerset West, RSA<br>H. Knoetze, J. Cripwell<br>Stellenbosch University, Stellenbosch, RSA | **B11** **HIGH ENERGY COMPOSITE ROCKET PROPELLANT ACCELERATED AGING STUDY**<br>T. G. Manning, H. A. Grau, A. Y. Gandzelko, S. Swaszek, E. T. Wrobel, D. R. Alonso, N. A. Matlick, N. M. Peabody, P. J. Samuels<br>US Army DEVCOM, Picatinny Arsenal, USA<br>C. E. Owens<br>Leidos, Reston, USA |
| 17.00 | **A12** **NITRATION SPENT ACID RECOVERY: EFFICIENT AND EFFECTIVE EFFLUENT RECOVERY IN THE PRODUCTION OF ENERGETIC MATERIALS**<br>K. Seibert<br>Kellog Brown & Root GmbH, Bad Homburg, D | **B12** **FROM SCREENING TO QUANTITATIVE ANALYSIS: AN EVALUATION AND REPLACEMENT OF BROWN FUME TEST**<br>Y. Salamanca, K. Skanberg<br>FOI, NORRA SORUNDA, SE |

# Thursday, June 25

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | **KEYNOTE SESSION II**<br>**Chair:** S. Wurster, Fraunhofer ICT, D | |
| 09.00 | **K3** **AN ORGANIKER POACHING IN PNICTOGEN TERRITORY**<br>P. R. Schreiner<br>Justus-Liebig-University, Giessen, D | |
| 09.30 | **K4** **PROJECT OVERVIEW EU AND NATIONAL**<br>J. Greinert<br>GEOMAR, Kiel, D | |
| 10.00 | **Coffee break** | |
| | SESSION A4<br>**AI AND MACHINE LEARNING**<br>**Chair:** J. Pachman, University of Pardubice, CZ | SESSION B4<br>**MUNITION IN THE SEA – DISPOSAL TECHNOLOGIES**<br>**Chair:** S. Wurster, Fraunhofer ICT, D |
| 10:40 | **A13** **PREDICTING THE SENSITIVITY OF ENERGETIC COMPOUNDS THROUGH MACHINE LEARNING: FOR DISCOVERING INSENSITIVE ENERGETIC MATERIALS**<br>Yu-Cong Chen, Wenbin Yi<br>Nanjing University of Science and Technology, Nanjing, PRC | **B13** **SEATERRA'S 2024 SURVEY AND CLEARANCE CAMPAIGN IN THE BALTIC SEA WITHIN THE GERMAN "SOFORTPROGRAMM"**<br>D. Guldin<br>SeaTerra GmbH, Wandlitz, D |
| 11.00 | **A14** **FROM SCARCE SIMULATIONS TO INSIGHT: CLOSED-LOOP AI FOR EXPLORING MICROSTRUCTURE-PERFORMANCE RELATIONSHIPS**<br>J. B. Choi, S. Baek<br>University of Virginia, USA<br>Y. T. Nguyen, H. S. Udaykumar<br>University of Iowa, USA | **B14** **SCALING THE SAFE DISPOSAL OF CONVENTIONAL MUNITIONS: FROM OPTIMISATION TO TRANSFORMATION**<br>B. Niemeyer<br>GEKA mbH, Munster, D |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| 11.20 | **A15** **TOWARDS FOUNDATION MODELS FOR SHOCK COMPRESSION OF SOLID REACTIVE MATERIALS**<br>J. B. Choi, X. Cheng, H. Morsy, S. Baek<br>University of Virginia, USA<br>Y. T. Nguyen, H. S. Udaykumar<br>University of Iowa, USA | **B15** **THERMAL DESTRUCTION OF EXPLOSIVE SUSPENSIONS FROM WASHOUTS FROM LARGE-CALIBRE SEA-DUMPED AMMUNITIONS – DESIGN AND BUILDING A DEMONSTRATOR**<br>H. Weigel<br>Dynasafe, Langenselbold, D |
| 11.40 | **A16** **TOWARDS AN AI FRAMEWORK FOR PROCESS-STRUCTURE-PROPERTIES-PERFORMANCE RELATIONSHIPS IN HETEROGENEOUS ENERGETIC MATERIALS**<br>H. K. Springer, Y. Choi, C. M. Miller, S. W. Chung, K. T. Sullivan<br>Lawrence Livermore National Laboratory, Livermore, USA<br>H. S. Udaykumar, I. Fang<br>University of Iowa, Iowa City, USA<br>S. Baek, Z. Gray<br>University of Virginia, Charlottesville, USA | PANEL DISCUSSION<br>**MUNITION IN THE SEA – DISPOSAL TECHNOLOGIES**<br>Moderator: S. Wurster, Fraunhofer ICT, D |
| 12.00 | **A17** **AI AND MACHINE LEARNING FOR PREDICTING QUANTUM TUNNELING EFFECTS IN ENERGETIC MATERIALS**<br>Zihao Guo<br>Nanjing University of Science and Technology, Nanjing, PRC | PANEL DISCUSSION |
| 12.20 | **Lunch break** | |
| | **POSTER SESSION**<br>**Chair:** R. Doherty, Energetics Technology Center, USA | Session B5<br>**MUNITIONS IN THE SEA – INTERNATIONAL CASE STUDIES**<br>**Chair:** L. Wachter, Fraunhofer ICT, D |
| 14.00 | Poster Session (Foyer) | **B16** **COMPETITION OF IDEAS TO RECOVER AMMUNITION FROM SWISS LAKES AND RECENT INVESTIGATIONS**<br>A.-L. Gassner<br>armasuisse, Thun, CH |
| 14.20 | Poster Session (Foyer) | **B17** **REMEDIATION OF MUNITIONS IN THE WESTERN BALTIC SEA**<br>W. Sichermann<br>Seascape GmbH, Hamburg, D |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| 14.40 | Poster Session (Foyer) | **B18** **MUNITIONS RESPONSE PROGRAM**<br>D. Kolodrubetz<br>Institute for Defense Analyses, USA |
| 15.00 | Poster Session (Foyer) | **B19** **BUILDING A COMMUNITY ON MUNITIONS IN THE SEA AROUND NATIONAL EXPERIENCE AND EUROPEAN AND GLOBAL ACTION**<br>P. Trautendorfer<br>JPI Oceans, Brussels, B |
| 15.20 | **Coffee break** | |
| | | Session B6<br>**MUNITIONS IN THE SEA – COMBUSTION AND DETONATION METHODS**<br>**Chair:** P. Trautendorfer, JPI Oceans, B |
| 16.00 | **Short Introduction of exhibiting companies (16.00 – 16.45)** | **B20** **THE ROAD FROM REGULATION TO RESEARCH: INVESTIGATING UNEXPLODED MUNITIONS FROM THE BALTIC SEA**<br>A. Battig, G. Dudek<br>BAM, Berlin, D |
| 16.20 | **Short Introduction of exhibiting companies (16.00 – 16.45)** | **B21** **INVESTIGATIONS INTO PROCESS-ENGINEERING PECULIARITIES OF THE THERMAL DISPOSAL OF AMMUNITION AT SEA AS A SUSPENSION IN WATER**<br>V. Weiser, E. Roth, P. Pietrek, A. Raab, A. Kessler<br>Fraunhofer ICT, Pfinztal, D |
| 17.30 | **Bus Departure from Conference Hall to Fraunhofer ICT** | |
| 18.00 | **Get-together**<br>Barbeque Party, offering wine, draught beer | **Bus transfer to hotels, Karlsruhe City and Main Station will be available (starting 19.00 h during the whole evening).** |
| 00.00 | **Last bus** | |

# Friday, June 26

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | Session A6<br>**SIMULATION**<br>**Chair:** H.S. Udaykumar, University of Iowa, USA | Session B7<br>**MUNITIONS IN THE SEA – NEUTRALIZATION METHODS**<br>**Chair:** A. Keßler, Fraunhofer ICT, D |
| 09.00 | **A18** **NUMERICAL MODELLING OF HEAT TRANSFER IN CLOSED VESSEL**<br>M. Brateau, N. Chaigneau, M. Roulle<br>CRB – Ariane Group, Vert le Petit, F | **B22** **ENVIRONMENTAL IMPACTS OF LOW AND HIGH ORDER DETONATION IN WATER**<br>B. Sharma, J. Wardrop, F. Persico, T. Temple<br>Cranfield University, Cranfield Defence & Security, Shrivenham, UK<br>F. Coulon<br>Cranfield University, Cranfield Water Science Institute, Shrivenham, UK |
| 09.20 | **A19** **DEFLAGRATION-TO-DETONATION TRANSITION MODELING AND SENSITIVITY STUDIES**<br>H. K. Springer, J. E. Reaugh, C. M. Miller, B. W. White<br>Lawrence Livermore National Laboratory, Livermore, USA | **B23** **PRESSURE SIMULATION ON LOD AND HOD AND MITIGATION MEASURES FOR UNDERWATER MUNITIONS DISPOSAL IN THE MMINE-SWEEPER PROJECT**<br>L. Wachter<br>Fraunhofer ICT, D |
| 09.40 | **A20** **A COUPLED PHASE-FIELD AND LAGRANGIAN FRAMEWORK FOR SIMULATING FOAMED PROPELLANT COMBUSTION**<br>C. Houthuysen, E. Caravaca<br>US Army DEVCOM, Picatinny, USA<br>J. Heylmun<br>Synthetic Applied Technologies, Austin, USA | **B24** **MUNIREM®'S INTEGRATED APPROACH TO CHEMICAL NEUTRALIZATION OF UNDERWATER MUNITIONS**<br>V. Nzengung<br>University of Georgia / MuniRem Environmental LLC, Georgia, USA |
| 10.00 | **A21** **HIERARCHICAL MODELING OF PRESSED HIGH EXPLOSIVES: USING MICROSTRUCTURE-RESOLVED MESOSCALE SIMULATIONS TO INFORM CONTINUUM REACTIVE FLOW RESPONSE**<br>C. M. Miller, M. G. Malenda, M. A. Homel, D. K. Amondson, H. K. Springer, K. T. Sullivan<br>Lawrence Livermore National Laboratory, Livermore, USA | **B25** **DE-BOMBING THE FUZE**<br>K. Godfrey<br>Helix Robotics Solutions, Chichester, UK |
| 10.20 | **Coffee break** | |

| | LECTURE ROOM A | LECTURE ROOM B |
|---|---|---|
| | Session A7<br>**HIGH EXPLOSIVES**<br>**Chair:** A. Lefrancois, CEA, F | Session B8<br>**MUNITIONS IN THE SEA – RISK ASSESSMENT**<br>**Chair:** T. Kiefer, JPI Oceans, B |
| 11.00 | **A22** **EXPERIMENTAL DATA REQUIRED FOR CALIBRATION OF REACTIVE BURN MODELS IN PREDICTIVE EXPLOSIVE SIMULATIONS**<br>J. D. Olles, R. T. Ichiyama, A. F. Haslam, C. D. Woodruff, J. R. White<br>NSWC, Indian Head, USA | **B26** **THE IMPACT OF AGEING ON UNDERWATER DUMPED MUNITIONS**<br>A. S. Cumming<br>University of Edinburgh, Edinburgh, UK |
| 11.20 | **A23** **EXPERIMENTAL STUDY ON THE REACTION EVOLUTION OF PRESSED PBX CHARGE UNDER STRONG CONFINEMENT WITH DIFFERENT GAP CONDITIONS**<br>Xiaoyuan Yang, Chuanyu Pan, Hailin Shang, Tao Li, Haibo Hu, Hua Fu<br>Institute of Fluid Physics CAEP, Mianyang, PRC | **B27** **ASPECTS OF THE RISK ASSESSMENT LINKED TO OLD MUNITIONS BURIED IN THE SEABED**<br>B. Simoens<br>Royal Military Academy, Brussels, B |
| 11.40 | **A24** **DETONATION VELOCITY MEASUREMENT OF PETN/SILICONE MIXTURE AND ESTIMATION OF DETONATION PROPERTIES**<br>S. Kubota, Y. Sugiyama, T. Tamba, K. Nomura, T. Matsumura, K. Okada National Institute of Advanced Industrial Science and Technology AIST, Tsukuba, JAP | **B28** **PHYSICAL RISK ASSESSMENT OF WW2 DMM/UXO-FILLERS FROM LONG TERM SAMPLE STORAGE TRIALS**<br>F. Pfeiffer<br>Office for Environmental Geology & Security Research BfUS, D |
| 12.00 | **A25** **OBSERVATIONS AND PERSPECTIVES ON HEXANITROGEN C2H-N6**<br>E.-C. Koch<br>TU Kaiserslautern / Lutradyn Energetic Materials, Kaiserslautern, D<br>G. Hoss, F. Kraus<br>Universität Bonn, D | **CLOSING REMARKS MUNITION IN THE SEA**<br>T. Kiefer<br>JPI-Oceans, Brussels, B |
| 12.20 | **Closing Remarks and Award Ceremony** | |
| 12.40 | **Lunch** | |
| 13.45 | **End of Conference** | |

# Poster Program

Posters will be presented during the whole Conference.
A special **Poster Session** will take place on **Thursday, June 25, 14.00 – 15.00 h**. During this time authors should be present for discussion at their posters in the foyer of the Conference Hall.

**P1 THERMAL AND ENERGETIC BEHAVIOR OF AMMONIUM NITRATE MODIFIED WITH NITROCELLULOSE-COATED AIMG-NGO@$NFE_2O_3$ NANOTHERMITE**
F. Gahfif, M. K. Boulkadid, S. Touidjine, E. Louafi, M. Nourine, S. Belkhiri
Ecole Militaire Polytechnique EMP, Algiers, ALG

**P2 EFFICIENT AND SCALABLE SYNTHESIS OF OXAMIDE VIA CONTINUOUS FLOW TECHNOLOGY**
O. Karakurt, O. Bilen, N. Ozer Ucar, B. E. Celik Fidanci, M. Öztürk, K. Aydincak
Roketsan Missile Industries Inc., Ankara, TR

**P3 THERMODYNAMIC CALCULATION OF THE THEORETICAL PERFORMANCES OF ALICE PROPELLANT**
B. Raouf
Ecole Militaire Polytechnique EMP, Algiers, ALG

**P4 SUBSCALE COMBUSTION TESTING AND MODELING OF ENCAPSULATED NITRATE ESTERS AS IGNITERS**
D. T. Bird, C. A. Houthuysen, N. Peabody
US Army DEVCOM, Picatinny Arsenal, USA

**P5 DETONATION SIMULANT OF TATP AS DONOR CHARGE OF TERTIARY EXPLOSIVES**
D. Belmehdi, M.K. Boulkadid
Ecole Militaire Polytechnique, Algiers, ALG
M. H. Lefebre, R. van Riet
Royal Military Academy, Brussels, B

**P6 PREPARATION OF ELECTROSTATICALLY SAFE COPPER AZIDE/CARBON COMPOSITES WITH CORE-SHELL STRUCTURE BY HYDROTHERMAL CARBONIZATION METHOD**
Lipeng Zhan, Yan Hu, Lizhi Wu, Yinghua Ye, Ruiqi Shen
Nanjing University of Science and Technology, Nanjing, PRC / Micro-Nano Energetic Devices Key Laboratory of MIIT, Nanjing, PRC

**P7 DESIGN AND CHARACTERIZATION OF NEW ECO-FRIENDLY NITROBENZOXAZINE POLYMERS WITH ENERGETIC POTENTIAL**
T. Gouasmia, O. Mehelli, M. Derradji, A. Habes
Ecole Militaire Polytechnique, Algiers, ALG

**P8 DESIGN AND CHARACTERIZATION OF A PROMISING CHITIN-BASED ENERGETIC POLYSACCHARIDE**
S. Ouahioune, A. F. Tarchoun, D. Trache, F. Benaliouche
Ecole Militaire Polytechnique, Algiers, ALG
T. Klapötke
Ludwig-Maximilians-University, München, D

**P9 STUDY ON RELAXATION BEHAVIOR AND AGING MECHANISM OF HTPB PROPELLANT UNDER THERMAL AGING**
Qingxin Cui, Xiangyang Liu, Jiangtao Wang, Yingjun Chen, Xu Zhang
Beijing Institute of Technology, Beijing, PRC

**P10 SYNERGISTIC EFFECTS OF FE2O3-BAO-MWCNT-IL ON THE THERMAL BEHAVIOR AND STABILITY OF DOUBLE-BASE PROPELLANTS**
H. Hassam, S. Belkhiri, M. K. Boulkadid
Ecole Militaire Polytechnique, Algiers, ALG

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Y. Kwon
Daegu University, Gyeongsan Gyeongbuk, ROK

**P13 DISTRIBUTION OF OH FUNCTIONALITY VS MOLECULAR WEIGHT IN HYDROXYL-TERMINATED POLYBUTADIENE**
G. S. de Oliveira, T. S. Daitx, C. L. Petzhold
Institute of Chemistry UFRGS, Porto Alegre, BR

**P14 SIX SAFETY TESTS OF ONE EXPLOSIVE DEVICE**
Zi-jian Lyu, Liu-cheng Zhang, Qian Huang, Xiang Wang, Yu-shi Wen
Institute of Chemical Materials CAEP, Mianyang, PRC

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R. Makaoui, O. Mehelli, L. Hemmouche, M. Derradji
Ecole Militaire Polytechnique, Algiers, ALG

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Chengcheng Zeng, Wen Qian, Feiyan Gong, Fude Nie
Institute of Chemical Materials CAEP, Mianyang, PRC
Zijian Li
School of Materials, Science and Engineering Anhui University, Hefei, PRC
Zhichao Zhu, Liangfei Bai
Institute of Nuclear Physics and Chemistry CAEP, Mianyang, PRC

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H. Boukeciat, D. Trache, A. Fouzi Tarchoun, A. Abdelaziz
Ecole Militaire Polytechnique, Algiers, ALG

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Guo Haoran, Liu Xiangyang, Cui Qingxin, Wang Ningfei
Beijing Institute of Technology, PRC

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M. A. Bohn
Fraunhofer ICT, Pfinztal, D

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A. Chenicheni
Research and Development Center of National Gendarmerie, Algiers, ALG
A. Fouzi Tarchoun
Ecole Militaire Polytechnique, Algiers, ALG

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A. F. Tarchoun, D. Trache, A. Abdelaziz
Ecole Militaire Polytechnique, Algiers, ALG

**P22 SUSTAINING ENERGETIC MATERIALS CAPABILITY FOR THE FUTURE**
A. van der Heijden
TNO, The Hague, NL
A. Paraskos
US Army DEVCOM, Picatinny, USA

**P23 A METHODOLOGICAL APPROACH TO DETERMINE NUCLEATION, MELTING AND CRYSTALLIZATION TEMPERATURES USING TEMPERATURE DEPENDING POLARIZATION MICROSCOPY ON THE TNT/HNS SYSTEM**
F. F. Grieser, P. F. Schultz, J. T. Lechner
Fraunhofer ICT, Pfinztal, D

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C. Seidel, P. Schultz
Fraunhofer ICT, Pfinztal, D

**P25 AN INVESTIGATION INTO THE BURNING RATE OF DOUBLE-BASE PROPELLANTS WITH $CoFe_2O_4$@GO NANOCOMPOSITE AS CATALYST**
E. Louafi, M. K. Boulkadid, S. Belkhiri
Ecole Militaire Polytechnique, Algiers, ALG

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A. Cucuzzella, Y. Caridi, F. Vicini, S. Berrone
Politecnico di Torino, IT

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E. Glascoe, C. Cockreham, S. Hawks, J. Rosener, G. Guillen
Lawrence Livermore National Laboratory, Livermore, USA

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M.K. Boulkadid, F. Gahfif, M.E.A. Facih, S. Belkhiri
Ecole Militaire Polytechnique, Algiers, ALG

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S. Knapp, M. Moroff, A. Koleczko, A. Raab, V. Weiser
Fraunhofer ICT, Pfinztal, D

**P30 APPLICATION OF SHS-SYNTHESIZED NANOSTRUCTURED BORON PARTICLES IN SOLID ROCKET PROPELLANTS**
S. Knapp, S. Fischer, A. Koleczko, K. Hennig
Fraunhofer ICT, Pfinztal, D

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W. Becker, S. Knapp
Fraunhofer ICT, Pfinztal, D

**P32 MACHINE LEARNING REGRESSION MODELS FOR THE PREDICTION OF THERMITE PROPERTIES**
W. Becker, S. Knapp
Fraunhofer ICT, Pfinztal, D

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T. Hensel, P. Pietrek
Fraunhofer ICT, Pfinztal, D

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M. Moroff, M. Hausmann
Fraunhofer ICT, Pfinztal, D

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E. Wegert, K. Busch, P. Schultz
Fraunhofer ICT, Pfinztal, D
M. Bauer
Heinrich-Lanz-School, Mannheim, D

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P. Schnippering, M. Comet
ISL, Saint-Louis, F
V. Goetz, E. Fousson
ISL-CNRS, F

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Chuanyu Pan, Xiaoyuan Yang, Hailin Shang, Tao Li, Qingpeng Ma, Hua Fu
Institute of Fluid Physics CAEP, Mianyang, PRC

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Lin Ling, Long Lu
Shanghai Institute of Organic Chemistry CAS, Shanghai, PRC

**P39 MECHANICAL AND THEORETICAL ENERGETIC EVALUATION OF AN-BASED COMPOSITE PROPELLANTS CONTAINING PU/NITROCELLULOSE BINDERS**
R. Cheddadi, S. Touidjine
Ecole Militaire Polytechnique, Algiers, ALG

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A. M. Chaouch, S. Touidjine
Ecole Militaire Polytechnique, Algiers, ALG

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Institute of Chemical Materials CAEP, Mianyang, PRC

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V. Kuchenreuther-Hummel, S. Knapp, A. Koleczko, E. Walschburger
Fraunhofer ICT, Pfinztal, D

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M. Lasota, V. Kuchenreuther-Hummel
Fraunhofer ICT, Pfinztal, D

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M. Heil, C. Müller, J. Hickmann, C. Fuchs, K. Wimmer
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Instituto de Aeronautica e Espaco IAE, São José dos Campos, BR
L. F. A. Ferrao
Instituto Tecnologico de Aeronautica ITA, São José dos Campos, BR

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K. Olsen, M. Brantlind
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L. Boumaza, A. F. Tarchoun, D. Trache
Ecole Militaire Polytechnique, Algiers, ALG

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D. Yadav, G. Gupta, R. B. Pawar
HEMRL, Pune, IND

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A. Omlor
Fraunhofer ICT, Pfinztal, D
J. Glorian
ISL, Saint-Louis, F

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M. Schäfer, I. Wilhelm, J. T. Lechner
Fraunhofer ICT, Pfinztal, D

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K.-T. Han, F. Ciszek, S. Braun
ISL, Saint-Louis, F

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L. C. Farrar
Resodyn Corporation, Butte, USA

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I. Wilhelm, W. Schweikert, S. Müller, F. Schnürer
Fraunhofer ICT, Pfinztal, D
M. Härtel
Federal Police HQ, Lübeck, D
T. M. Klapötke
Ludwig-Maximilians-University, München, D

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L. V. Hooker, L. Stevens-Ouellet, C. J. Snyder
Los Alamos National Laboratory, New Mexico, USA

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Yuehui Wang, Lele Wen, Lin Ling, Chunhui Xing, Long Lu
Shanghai Institute of Organic Chemistry CAS, Shanghai, PRC

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Yang Chen, Yanchun Li, Dongming Song
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Notes

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**56th International Annual Conference of the Fraunhofer ICT**

**June 29 – July 2, 2027**
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