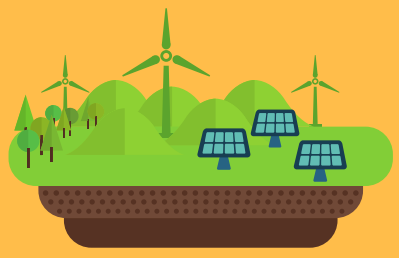
European INNOVATION Council



Research Meets Industry

FET Briefing

MATCHMAKING EVENT IN THE FIELD OF ENERGY AND ENVIRONMENT

RESEARCH MEETS INDUSTRY

MATCHMAKING EVENT ON ENERGY AND ENVIRONMENT



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FET Briefing

European eic INNOVATION Council

FOREWORD

The EU long-term budget, coupled with the NextgenerationEU, is the largest package ever financed through the EU, with a total of Eur 1.8 trillion to contribute to repair the economic and social damage caused by the coronavirus pandemic, and to lay the foundations for a greener, more digital and more resilient Europe. More than 50% of this budget will support modernization, through increased resources for research and innovation via Horizon Europe, or for fair climate and digital transitions via the Just Transition Fund and the Digital Europe Programme. Climate change mitigation goals will cover the highest share ever of this budget, exceeding Eur 550 Billion in the Framework 2021-27.

In this context, innovation, intended as the process where an idea or a technology is developed for commercial purposes and adopted by the market, represents a key pillar to achieve these ambitious social and economic development targets set by the EU recovery plan. The Triple Helix model of innovation highlights that the innovation process has a systemic non-linear character where the interactions between universities, researchers, industry, entrepreneurs, governments and policymakers evolve up to the point where each actor adopts some characteristics of the other with a beneficial contamination. It is well-known that innovation rarely is the result of isolated initiatives, and it is crucial to capture and turn into socio-economic added value the technological resources to crosslink high education, research and business actors.

This “Research meets Industry“ event aims at promoting the aforementioned innovation systemic approach, with a focus on Energy and Environment sectors, in particular on Energy Storage and Conversion technologies, Solar Fuel and Energy Harvesting technologies.

It is an initiative in the context of the European Innovation Council (EIC). The mission of EIC is to identify and nurture breakthrough research and game-changing innovations to develop deep tech companies and entrepreneurs, so overcoming the European Paradox - the perceived limitations of European Countries to transfer scientific results into innovations.

FOREWORD

EIC supports all stages of innovation: from early-stage non-incremental research to validation and demonstration of breakthrough technologies and innovations, up to the development and scaling up of start-ups and SMEs. EIC is the first European hands-on Innovation Agency with a risk-taking mindset and aimed to unify policy and implementation actions via a pro-active portfolio management approach proposed by the EIC Programme Managers. Within the EIC, the Pathfinder is the home for deep-tech research and innovation in Horizon Europe. Building on 30 years of successes of the Future and Emerging Technologies (FET) EC programme, it supports science-inspired research for radically new future technologies and has impacts on knowledge production as well as on people, society and economy.

During the "Research meets Industry" event, Pathfinder project beneficiaries will present their research results to an audience of managers, entrepreneurs and investors and will join a discussion mediated by the EIC Programme Managers responsible for Green Technologies. The event will provide Pathfinder researchers with the possibility to experience the innovation journey from the end user perspective so highlighting aspects that are not usually addressed in research labs. On the other hand, corporate and investors will get first-hand insight on the novel research trends and will establish promising contacts for their strategic innovation plans and future research and innovation consortia.
"Research meets Industry" is an important step for the reinforcement of the European Technology Sovereignty in Green Technologies and has the aim to stimulate future partnerships among the participants to reach the ambitious goals of the European Green Deal. As EIC Programme Managers, it is our role to catalyse these exchanges that will turn the amazing innovation potential from Pathfinder projects into a European reality.

Francesco Matteucci
EIC Programme Manager

Antonio Marco Pantaleo
EIC Programme Manager

MEET THE EIC PROGRAMME MANAGERS

FET Briefing

EIC PROGRAMME MANAGER

FRANCESCO MATTEUCCI

Francesco is an innovation manager with 20 years of experience spent as a researcher in materials science, as a Corporate R&D Manager within the field of technologies for renewable energy production and storage, and as an intermediary of knowledge trying to exploit the research results within the field of energy and environment. As R&D Corporate manager, he also cofounded and directed several start-ups and joint-labs managing public-private partnerships. As a facilitator of knowledge exploitation (IoK), he co-managed publicly funded projects, as well as Emilia Romagna Climate-KIC Innovation Centre, Dhitech Living Lab on Nanotechnologies, Emilia-Romagna Greentech Clust-ER. Francesco acted as scientific expert within the Vanguard Initiative ADMA Pilot, reviewer of research projects, co-authored over 30 scientific papers, 5 patents, and was Visiting Professor at the University of Ferrara as well as speakers in many conferences and workshops. Since October 2020 he acts as Green Technologies Programme Manager within the EIC.

AREA OF EXPERTISE: MATERIALS FOR ENERGY AND ENVIRONMENTAL SUSTAINABILITY, INNOVATION MANAGEMENT

EIC PROGRAMME MANAGER

ANTONIO MARCO PANTALEO

Antonio has 20 years of experience in multidisciplinary research projects in renewable and clean energy technologies, energy systems integration, biosystems engineering and techno-economic assessment of energy investments. He holds a first degree in electric engineering and a PhD in process systems engineering from Imperial College London where he is affiliated as research fellow to the Department of Chemical Engineering. Antonio is also associate professor of clean energy technologies at the Department of agro-environmental sciences of the University of Bari. He co-founded an energy service company and worked as scientific expert and consultant for a number of public and private organisations. Antonio authored over 70 scientific papers and delivered speeches to several scientific conferences and workshops. Since October 2020 he acts as Green Technologies Programme Manager within the EIC.

AREA OF EXPERTISE: CLEAN ENERGY TECHNOLOGIES AND ENERGY SYSTEMS AND BIOSYSTEMS ENGINEERING

INTRODUCTION

RESEARCH MEETS INDUSTRY



The “Research Meets Industry” event brings together the best European researchers and spinoffs working on future technologies in the Energy and Environment field.
19 exciting Future and Emerging Technology/EIC Pathfinder projects funded by the European Commission and selected through an open call have the chance to present their breakthrough innovations to an audience of companies, corporates, research institutions and business stakeholders.

Based on the high number of applications received the projects have been thematically divided in three sessions, two on the 4th March and one on the 21th April 2021:

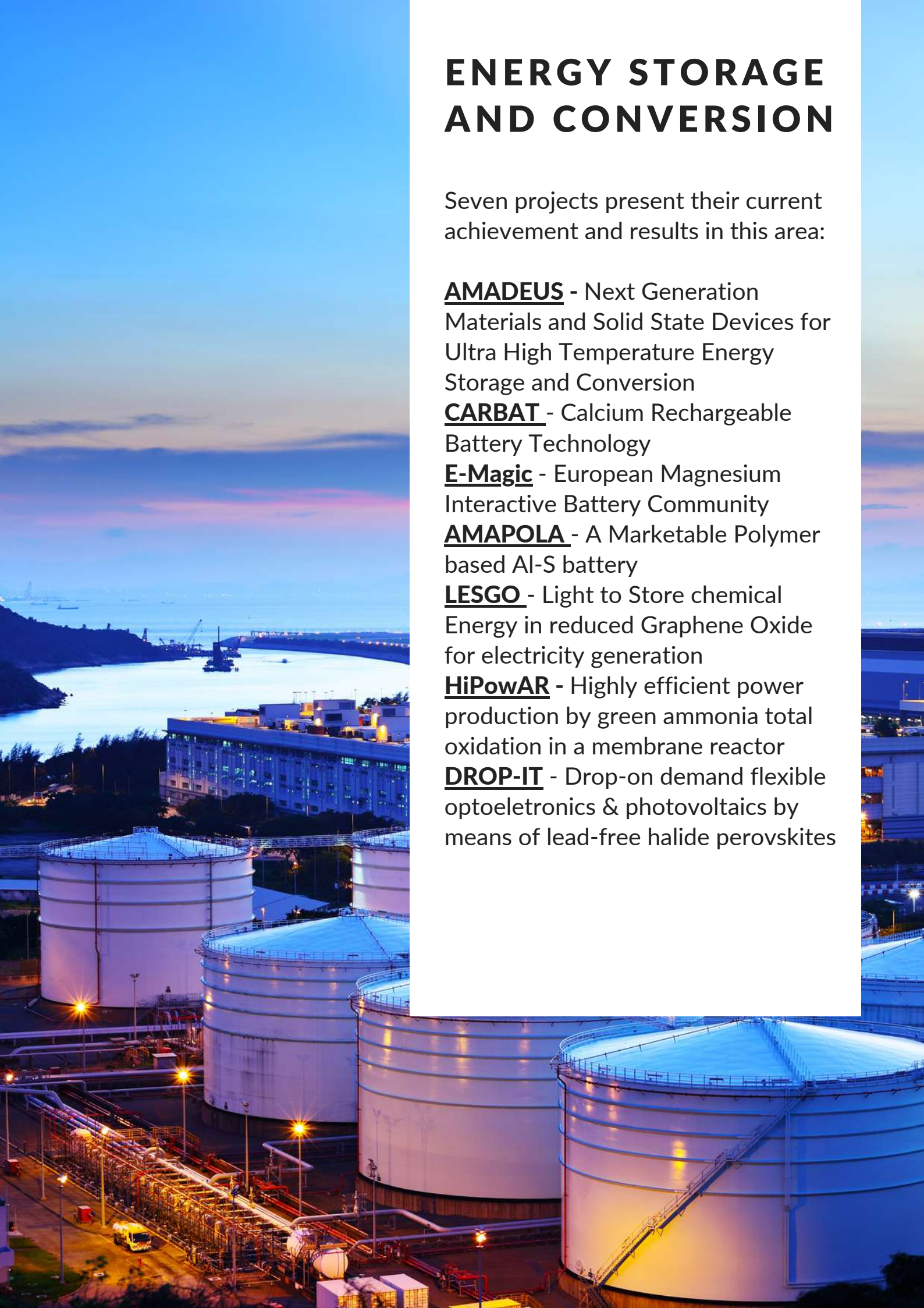
Energy Storage and Conversion
Solar Fuel and Energy Harvesting
Materials and Technologies for Energy and Environment

The matchmaking format of the event offers a great opportunity to innovative businesses to discover technology that might disrupt the energy industry and build future cooperation.
This booklet gives an overview of the innovative projects presenting and of the stakeholders, companies and corporates involved in the matchmaking.

Full program and further information: www.fetbriefing.eu

PROJECTS IN THE ENERGY AND ENVIRONMENTAL FIELD

FET Briefing



ENERGY STORAGE AND CONVERSION

Seven projects present their current achievement and results in this area:

AMADEUS - Next Generation Materials and Solid State Devices for Ultra High Temperature Energy Storage and Conversion
CARBAT - Calcium Rechargeable Battery Technology
E-Magic - European Magnesium Interactive Battery Community
AMAPOLA - A Marketable Polymer based Al-S battery
LESGO - Light to Store chemical Energy in reduced Graphene Oxide for electricity generation
HiPowAR - Highly efficient power production by green ammonia total oxidation in a membrane reactor
DROP-IT - Drop-on demand flexible optoeletronics & photovoltaics by means of lead-free halide perovskites

ENERGY STORAGE AND CONVERSION

Power-to-Heat-to-Power: Combining Cheap Energy Storage and Cogeneration
Alejandro Datas, Technical University of Madrid (AMADEUS)

Modular energy storage technology for the cogeneration of heat and electricity. Stores electricity in the form of heat and produces both heat and electricity on demand. The system has an extreme energy density (over 1 kWh/litre) and round-trip efficiencies over 30% (electricity output) or 80% (both heat and electricity outputs). It uses silicon-based phase change materials with melting points over 1000°C and thermophotovoltaic devices for thermal-to-electric energy conversion.

A lab-scale system prototype has been developed and is available at Technical University of Madrid. First tests have been conducted at system level. Optimal materials for thermal energy storage (silicon-based phase change materials) have been produced and characterized. Thermophotovoltaic devices have been also developed. An experimental setup has been built for the characterization of thermophotovoltaic devices under operation at extreme temperature conditions.

Calcium– The next generation battery technology
Patrik Johansson, Chalmers University of Technology (CARBAT)

The objective of CARBAT is to achieve proof-of-concept for a Ca metal anode based rechargeable battery with an energy density considerably higher than today's lithium-ion batteries. Materials are developed, integrated and validated in lab-level cell demonstrators. https://cutt.ly/fjJR3x0

Several potential cathode materials for the calcium-based battery technology, identified via ab initio calculations mapping composition-structure-property relations. Active materials confirmed to allow for reversible Ca insertion and hence battery operation. Promising electrolyte compositions and concepts.

ENERGY STORAGE AND CONVERSION

Demonstrating the feasibility of magnesium secondary batteries at pouch cell level
J. Alberto Blázquez, CIDETEC (E- Magic)

The rechargeable magnesium battery (RMB) constitutes a paradigmatic example of promising, alternative non-Li energy storage systems. The potential to use metallic Mg anodes in rechargeable batteries brings important advantages in terms of energy density (viz. 2-times higher Wh/l vs. LIB), cost and safety. Thus, E-MAGIC project addresses this potential by means of developing RMB based on Mg-ion and MgS technologies.

Pioneering Emagic's research groups demonstrated the long-term reversibility of Mg-ion system at lab-scale. However, the technology validation requires industrial-like battery prototypes to study the scalability of the system and optimize cell design to reach high energy densities keeping the long-term reversibility. In this regard, it will show the developments achieved with a small battery pouch cell prototype (0.3 Ah). The strategy to boost and to demonstrate the potential of the technology is proposed.

Electrolyte development for aluminum batteries
Anthony J. Lucio, University of Leicester and Ana L. Cudero, ICTP-CSIC (AMAPOLA)

The AMAPOLA project is developing aluminum-sulfur (Al-S) based battery technology. The materials employed are highly abundant, inexpensive, and non-hazardous, in addition to being amenable towards scale-up. With a prospective energy density of 660 Wh·L-1 and a specific energy of 400 Wh·kg-1, this novel battery technology has the potential to compete and outperform traditional Li-ion batteries. The main objectives of AMAPOLA are: (1) optimize the component material performance, (2) focus on scale-up and TRL progress for real-world applications, and (3) explore pre-industrialization and market aspects.

ENERGY STORAGE AND CONVERSION

Light to store chemical energy in reduced graphene oxide for electricity generation

Alastair Cunningham, ICFO - The Institute of Photonic Sciences (LESGO)

Hydrogen is a promising route to store energy, potentially mitigating the unpredictability of renewable electricity generation. LESGO proposes to store energy in the C-H bond of reduced graphene oxide (rGO-H). rGO-H can be stored safely, exhibits an energy density more than 100 times that of H2 gas, and can be easily transported wherever electricity generation is needed. rGO-H can become an ideal energy stock at an affordable cost.

Self-pressurizing combustion - the core of HiPowAR

Angela Kruth, Leibniz Institute for Plasma Science and Technology (INP) and Ralf Kriegel, Fraunhofer Institute for Ceramic Technologies and Systems IKTS (HiPowAR)

Aim of HiPowAR is the proof of concept for a novel energy converter, which is based on a membrane reactor equipped with mixed conducting membranes permeable for oxygen at high temperatures. Ammonia will be utilized as a C-free, sustainable synthetic fuel. Since its combustion is difficult, it is carried out directly at the membrane surface delivering O2. This is comparable to a SOFC, but the energy released is used for a self-acting pressurizing of the gases producing useful work in a gas expander. The system is expected to be simpler than SOFC, more efficient, easily to scale and more affordable.

The HiPowAR approach is based on the so-called Self-Pressurizing Combustion (SPC). A detailed modelling of corresponding power plant processes results in efficiencies up to 75 % far beyond the state of the art. However, these results are only valid for 1500 °C and 500 bar. The efficiency of the HiPowAR test rig will be quite lower because of its small size and the restricted operation conditions. Nevertheless, experimental data of the test rig shall be used to verify a system model enabling the prediction of real efficiencies for SPC converters at distinct operation conditions.

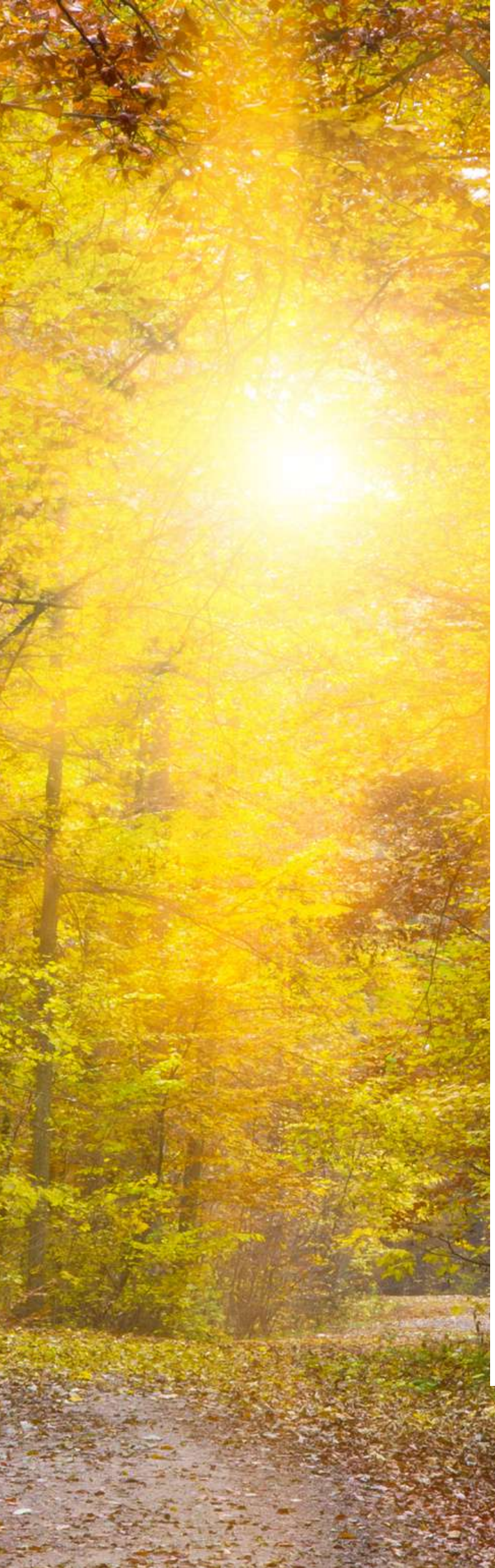
ENERGY STORAGE AND CONVERSION

DROP-IT: new materials and devices for new markets

Juan P. Martínez-Pastor, University of Valencia (DROP-IT)

DROP-IT proposes a drop-on demand inkjet technology platform of novel lead-free metal halide perovskites on flexible substrates, as the most promising route to revolutionize the fields of printed flexible photovoltaics, optoelectronics & photonics. The well recognized success and performance of lead halide perovskites for solar cells and optoelectronics motivates the exploration of original alternatives and pioneering avenues to develop new perovskite materials, lead free, with real potential of synthesis from solution techniques like inkjet printing.

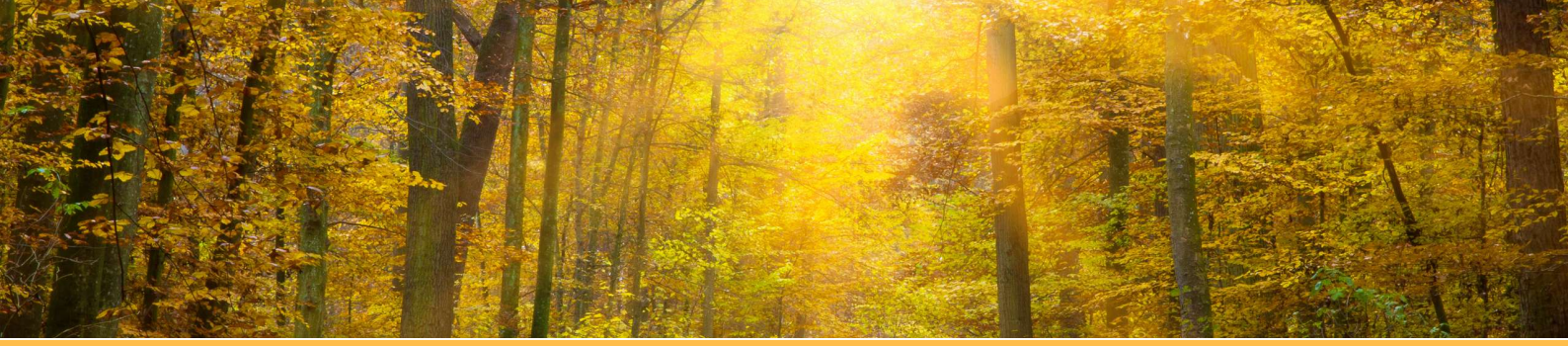
Some perovskite-like candidate has been computationally selected. Successful chemical synthesis of lead-free materials, as FASnI3 nanocrystals, CsBr:Sn (useful for white LEDs) nanoparticles, Ag2BiI5 and Ag3BiI6 lead-free rudorffites as nanoparticles and polycrystalline thin films, FASnI3 in the form of thin films from molecular precursos (as the base for benchmark optoelectronic/photonic devices). Also, a “liquid septum” was developed to protect in air precursor solutions. Moreover, several charge (electron and hole) transport materials based on mixed metal oxides were formulated from molecular precursors.



SOLAR FUEL AND ENERGY HARVESTING

Seven projects present their current achievement and results in this area:

A-LEAF - An Artificial Leaf: a photo-electro-catalytic cell from earth-abundant materials for sustainable solar production of CO2-based chemicals and fuels
SoFIA - Soap Film based Artificial Photosynthesis
LICROX – Towards a sustainable artificial photosynthesis device for converting sunlight, water and carbon dioxide (CO2) into carbon-based molecules capable of storing chemical energy
MAGENTA - Magnetic nanoparticle based liquid energy materials for thermoelectric device applications
HARMoNiC - Hierarchical Multiscale NanoInterfaces for enhanced condensation processes
NANO-EH -Nanomaterial enabling smart energy harvesting for next-generation internet-of-things
ELECTRO-INTRUSION - Simultaneous transformation of ambient heat and undesired vibrations into electricity via nanotriboelectrification during non-wetting liquid intrusion-extrusion into-from nanopores



SOLAR FUELS AND ENERGY HARVESTING

A photo-electro-catalytic cell from earth-abundant materials for sustainable solar production of CO2-based chemicals and fuels

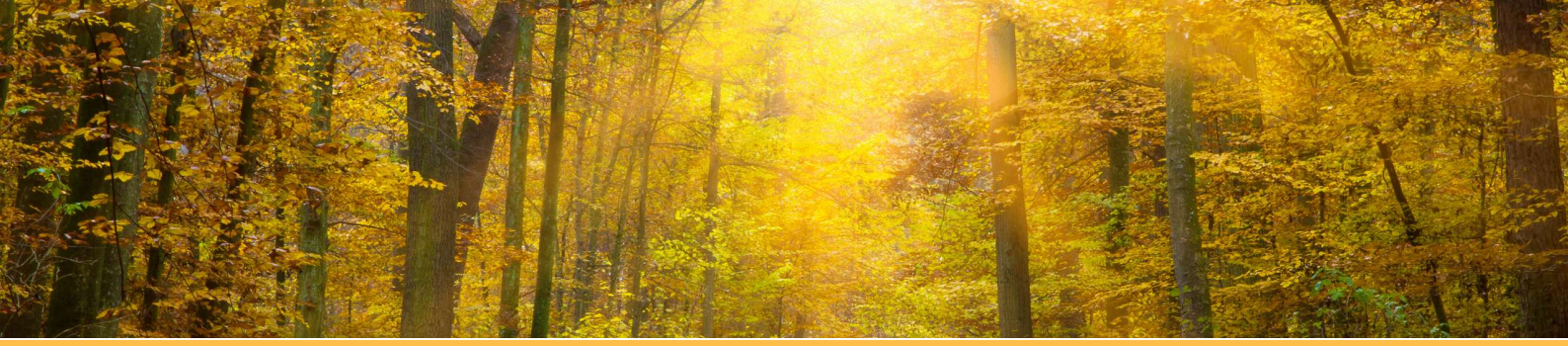
José Ramón Galán Mascarós, ICIQ - Institute of Chemical Research of Catalonia (A-LEAF)

A photo-electro-catalytic cell able to convert water and CO2 into fuels and fine chemicals using exclusively solar energy will be designed, built, validated, and optimized. The cell consists of inexpensive photo-electrodes able to transform sun irradiation into an electrochemical potential difference (expected efficiency > 12%); ultra-thin layers and nanoparticles of earth abundant and non-CRM metal or metal oxide catalysts (expected efficiency > 90%); and state of- the-art membrane technology for gas/liquid/products separation targeting a solar to fuels efficiency above 10%.
We have achieved these results exclusively with abundant and non-critical materials: carbon, silicon, copper, iron, zinc or nickel and using scalable and industrially-accepted processing methods: thermal treatment at low pressure, adsorption processes, water-based washing and filtering, and non-toxic solvents.

Green hydrogen and CO2 based fuel using flowing soap foam as micro-reactor

Indraneel Sen, Uppsala University (SoFIA)

We are developing a radical breakthrough by developing economically viable solar fuel production technology, exploiting the self-assembly, proton transport and membrane properties of soap films. Producing renewable solar fuel by Artificial Photosynthesis (AP) is globally recognized as a promising solution to modern energy & environmental crisis with decisive social impacts, but there are critical roadblocks in technology development. SoFiA aims to initiate & consolidate a baseline of feasibility for soap film based AP technology and its future uses by establishing the essential proofs-of principle & foundational scientific underpinnings. Our technology is made scalable by the design concept of a dynamic stream of regenerative soap bubbles capable of handling large volumes of gas, continuously flowing through a light exposed conduit.
We have developed: 1. A platform for a single artificial leaf;
2. A proof of principle of a dynamic stream of soap bubbles potentially acting as a continuous reactor producing and separating solar fuel from oxygen.



SOLAR FUELS AND ENERGY HARVESTING

Towards a sustainable artificial photosynthesis device for converting sunlight, water and carbon dioxide (CO2) into carbon-based molecules capable of storing chemical energy.

Antoni Llobet, ICIQ- Institute of Chemical Research of Catalonia (LICROX)

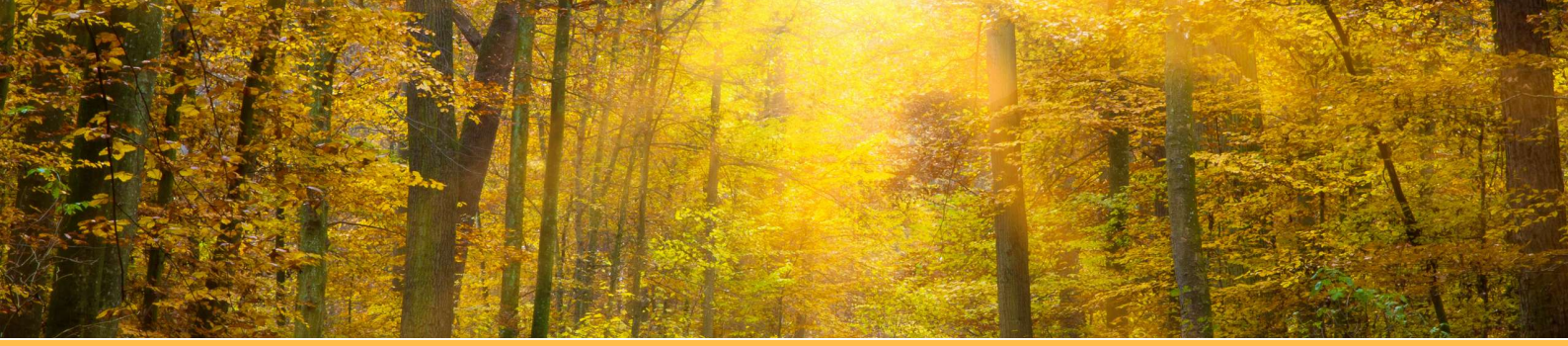
Artificial photosynthesis mimics the natural process of converting sunlight to energy stored in chemical bonds. In LICROX we will fabricate and test a photoelectrochemical cell (PEC), an artificial photosynthesis device for converting sunlight, water and carbon dioxide (CO2) into carbon-based molecules containing 1 carbon (C1) or 2 carbons (C2), capable of storing chemical energy.
LICROX will target the formation of ethylene, one of the products mostly used by chemical industries, with a high energy efficiency (Faradaic efficiency (FE) larger than 85%).

Progressive technology for body- and waste-heat energy harvesting

Philippe Potty, HES-SO Haute école spécialisée de Suisse occidentale, (MAGENTA)

MAGENTA proposes a brand new technological path in thermoelectric materials research for waste-heat recovery applications. The originality of the project is based on the newly discovered thermal-to-electric energy conversion capacity of ionic-liquids and ferrofluids. The lead-user industries targeted by MAGENTA are automobile and microelectronic sectors, but demonstration-type thermoelectric generators will also be produced for public outreach actions on waste-heat recovery.

Following the investigation of ionic liquids and their positive results, a Thermoelectric Generator prototype that converts heat into electrical power was developed using innovative materials and technologies, yielding promising results. Sectors of application of this whole concept include automotive and consumer electronics, e-health wearables, in which vast levels of heat energy are dissipated while low energy consumption would be required.



SOLAR FUEL AND ENERGY HARVESTING

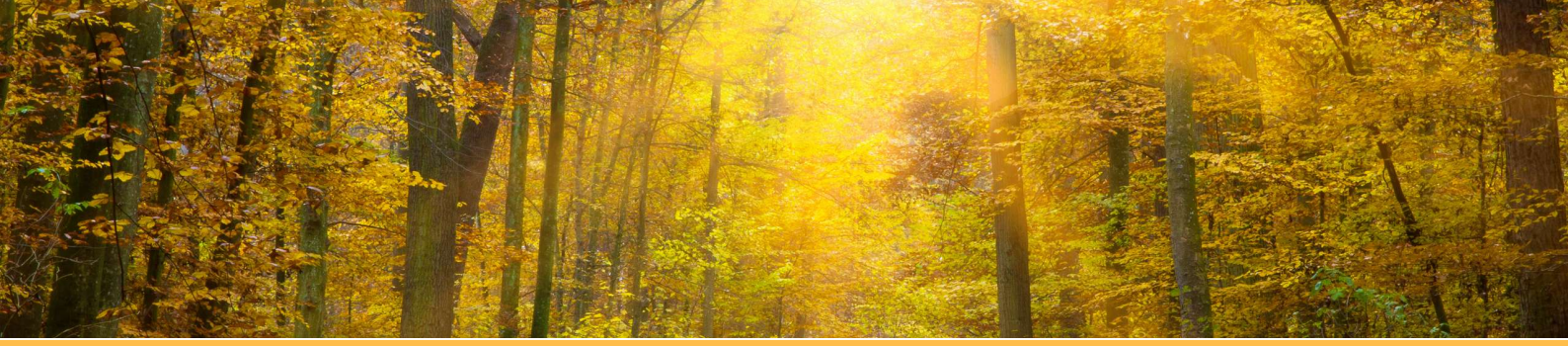
Nanomaterial enabling smart energy harvesting for next-generation internet-of-things - *Mircea Modreanu, Tyndall National Institute-University College Cork, (NANO-EH)*

NANO-EH exploit smart nanomaterials that are non-toxic, lead- and rare earth-free materials, and will demonstrate their recyclability potential at module level. NANO-EH target further development of Internet of Things for newer application such as personalised medicine of the future, smart farming and environmental monitoring.

The significant broadening of the wireless communication spectrum in Europe makes the radio frequency energy scavenging a highly desirable way forward for clean powering of the next-generation IoT. To enable next-generation, self-powered (autonomous) wireless devices the key challenge is to capture energy supply from energy harvesting sources, integrating new devices for energy storage and taking into account the micro-power management unit requirements for the miniaturised system operation.

Simultaneous transformation of ambient heat and undesired vibrations into electricity via nanotriboelectrification during non-wetting liquid intrusion-extrusion into-from nanopores - *Yaroslav Grosu, CIC energiGUNE (Electro-Intrusion)*

In this project a new and highly efficient method and apparatuses for the simultaneous transformation of mechanical and thermal energies into electricity in explored. In particular, zero-emission nanotriboelectrification during non-wetting liquid intrusion-extrusion into-from nanoporous solids is studied. The proposed method can be used for energy scavenging within a wide range of technologies, where vibrations and heat are available in excess (train, aviation, domestic devices, drilling, etc.). It can be used to convert undesiered vibrations and/or excess or inveronmental heat into usefull electricity. In particular, we estimate that the use of the proposed approach only within the automobile sector can reduce the overall EU electricity consumption by 1-4% in 2050. With this regard, the final stage of the project implies regenerative shock-absorber development and field-testing for a drastic maximization of the maximum range of hybrid / electric vehicles.
The proof-of-concept has been demonstrated in the preliminary works of the consortium



SOLAR FUEL AND ENERGY HARVESTING

Nanocomposite materials for more efficient energy production
Athanasios Milionis, ETH Zurich (HARMoNIC)

Our vision consists of developing solutions related to significant enhancement in the efficiency of thermal power generation by enhancing condensation heat transfer, a basic process that occurs in the majority of power plants. This can be achieved with engineering micro/nano-structured materials that show extreme condensate removal properties, combined with high transfer coefficient. We target lifetime performance relevant to industrial surface condensers, while maximizing their heat transfer coefficient by up to an order of magnitude. This can lead to huge energy savings.

We have developed a very promising composite material which consists of a thin layer (~ 2 µm) polytetrafluoroethylene – carbon nanofiber. Carbon nanofibers in a polytetrafluoroethylene matrix increase coating thermal conductivity and promote easy condensate removal. The coating material can be deposited through direct spraying, ensuring economical scalability and versatility for a wide range of substrates. It shows also superior durability to existing state-of-the-art materials and up to ~ 900% improvement in condensation heat transfer compared to conventional surfaces.

MATERIALS AND TECHNOLOGIES FOR ENERGY AND ENVIRONMENT

Five projects present their current achievement and results in this area:

ARTIBLED - Engineered Artificial proteins for Biological Light-Emitting Diodes

PHEMTRONICS - Active Optical Phase-Change Plasmonic Transdimensional Systems Enabling Femtojoule and Femtosecond Extreme Broadband Adaptive Reconfigurable Devices

RADICAL - Fundamental Breakthrough in Detection of Atmospheric Free Radicals

PEGASUS - Plasma Enabled and Graphene Allowed Synthesis of Unique nano Structures

PETER - Plasmon Enhanced Terahertz Electron Paramagnetic Resonance

MATERIALS AND TECHNOLOGIES FOR ENERGY AND ENVIRONMENT

Bio-based light-emitting diodes

Rubén D. Costa, Technical University of Munich (ARTIBLED)

ARTIBLED proposes an innovative approach to forge new artificial fluorescent proteins (AFPs) as color down-converting filters to enhance bio-hybrid white light-emitting diodes (Bio-WLEDs) meeting the technology needs for TRL4. The action plan involves i) synthesis of new AFPs via bioconjugation and UAA technologies, ii) their use as color down-converting filters in WLEDs, iii) laboratory and industrial bacterial productions, and iv) validation of AFPs potential in lighting (stability/cost/viability).

ARTIBLED proposes a three-step innovative approach to forge new artificial fluorescent proteins (AFPs) to enhance Bio-WLEDs meeting the technology needs for lighting. Suitable LED emitters and protein scaffolds have been identified using synthesis, spectroscopic and computational tools. Devices featuring stabilitie of hundreds of hours and luminous efficiencies over 50 lm/W have been achieved.

PHEMTRONICS: an opportunity for ultrafast, low-energy consumption technologies

Maria Losurdo, CNR-Nanotec (PHEMTRONICS)

PHEMTRONICS develops a novel platform of eco-sustainable non-toxic phase-change materials to deliver innovative

- ultrafast light induced phase-change switches with the femtosecond time scale and with very low energy consumption < 500 fJ/pulse;
- reconfigurable broadband antenna arrays in the 1-30 GHz range with energy consumption per radiative element < 500 fj;
- adaptive switchable multiple-band photodetectors in the 400nm-2000nm;

reconfigurable optical chips for ultrafast and wideband signal processing.

Current results comprehend:

- Novel two dimensional materials platform phase change and light responsive
- Multipurposes Plasmonics materials and systems for energy, solar cells, biotech, sensing and photonics
- Broadband photodetector concepts
- Neuromorphic systems design
- Energy saving photonic integrated circuits

MATERIALS AND TECHNOLOGIES FOR ENERGY AND ENVIRONMENT

A fundamental breakthrough in detecting atmospheric radicals
Justin Holmes and Tamela Maciel, University College Cork (RADICAL)

RADICAL aims to develop a brand-new way of detecting atmospheric radicals in real-time. This will be a small, low-cost electronic sensor that will 'sniff' out short-lived radicals such as hydroxyl and nitrate, which play a key intermediary role in day- and night-time air quality.
This has never been done before, but if it works, our new RADICAL sensors will be cheap, small and able to be rolled out on a global scale to help us better monitor and model the role of radicals in air pollution and climate change.
These low-cost electronic sensors could also be adapted to detect other gases with a wide range of potential applications.

Plasma-based machine for a large-scale production of graphene&derivatives
Elena Tatarova, Institute for Plasmas and Nuclear Fusion of IST (PEGASUS)

The project PEGASUS embodies plasmas driven controllable design of matter at atomic scale level. PEGASUS ultimate goal is to create a highly efficient, catalyst/harmful-free novel and disruptive plasma method along with a proof-of-concept PEGASUS machine for a large-scale graphene/N-graphene direct synthesis, as well as N-graphene/metal oxides nocomposites and unique vertical N-graphene arrays grown on metal substrates, via breakthrough research on plasma-enabled singular assembly pathways.

We've developed a disruptive technology and a proof-of-concept machine for the manufacturing of high-quality graphene&derivatives at a large-scale. By applying special protocols, different advanced high-quality nanostructures with controllable properties, can be fabricated. The process is controllable, environmentally friendly, generates hydrogen as a by-product, is automated and produces batches of graphene or derivatives with consistent characteristics that can be directly used in applications.

MATERIALS AND TECHNOLOGIES FOR ENERGY AND ENVIRONMENT

PETER – sensitivity and accuracy combined

Božena Čechalová, Brno University of Technology (PETER)

PE THz EPR micro-spectroscopy will mean a revolution in the field of EPR by opening new possibilities to in-situ study of wide variety of materials for scientific, technological and medical purposes

Higher spectral resolution and enhanced sensitivity will have the following impact and ways of exploitation in the fields listed below:

- Distinction of different species in mixed systems → in-cell EPR (tumor diagnostics)
- Improvement in research of charge carrier properties → transforming research of organic and inorganic solar cells
- Detailed investigation of origins of failure of batteries → enhancement of battery lifetime → solutions for energy storage
- Investigation of molecular nanomagnets → emerging quantum technologies

STAKEHOLDERS, COMPANIES AND CORPORATES

FET Briefing

OVERVIEW OF COMPANIES AND CORPORATES

EDF Deutschland GmbH

EDF specialises in electricity, from engineering to distribution. The company's operations include the following: electricity generation and distribution; power plant design, construction and dismantling; energy trading; and transport.

EnBW Energie Baden-Württemberg AG

EnBW supplies around 5.5 million customers with electricity, gas and water as well as energy-related services and products. One of EnBW's key objectives is to make the opportunities of the sustainable new energy world available to people - intelligently, securely and simply.

EIT InnoEnergy

EIT InnoEnergy supports and invests in sustainable energy innovations which provide industry with risk free, pioneering new technologies that reduce energy costs, increase system performance, decrease greenhouse gas (GHG) emissions, create jobs, and increase competitiveness.

HOPU

HOPU is an innovation leader in the Internet of Things (IoT) solutions and Smart Cities. HOPU's main market is environmental monitoring solutions; covering digital services with dashboard and decision support tools based on AI algorithms.

Solenco Power NV

Solenco is a fast-growing Belgian SME innovator in the field of cleantech and specializes in hydrogen energy storage systems for houses and commercial buildings.

OVERVIEW OF STAKEHOLDERS, COMPANIES AND CORPORATES

Honeywell (HBT)

At Honeywell Building Technologies (HBT), we're transforming the way every building operates. Our diverse technologies and brands enable us to create holistic solutions, improving virtually every aspect of your building's environment and experience.

Tecnalia Ventures

At TECNALIA Ventures we focus our efforts on the creation of a venture building ecosystem in order to help TECNALIA transfer its technology to the market. We connect the three fundamental pillars of any innovation ecosystem: minds, management and money.

Beta-I

Beta-i is a global collaborative innovation consultancy that enables collaboration between entrepreneurs, investor and corporates.

1st Mile

1st Mile has more than 10 years of expertise providing successful grant applications for highly innovative projects, as well as effective project management and business development services.

BGI

Creating a connected generation of builders, through capacitation, finance, and exclusive opportunities. BGI Accelerator provides opportunities to deep tech startups (TRL > 4) via venture financing, connecting innovators with global investors.

OVERVIEW OF STAKEHOLDERS, COMPANIES AND CORPORATES

GFM (Generaciones Fotovoltaicas de la Mancha)
A pioneering company in the Renewable Energy sector that offer different solutions, such as Solar Self-consumption, Charging Points for Electric Vehicles, Solar Parking, Solar Pergolas, Hybrid Systems for Livestock and for large generators, Portable Energy Solutions, Solar Pumping and more.

Sc Energy LLC - Hungarian Hub of EIT InnoEnergy
EIT InnoEnergy is the innovation engine for sustainable energy across Europe. Scope of the Hub Hungary is to identify, develop, and support promising ideas, startups, and entrepreneurs and provide access to EIT InnoEnergy services.

Raiven Capital
Raiven focuses on Series A, early stage companies, just before scaling begins. Our partners have each run companies at every life-cycle stage, including start-ups, SMEs, and large corporations.

CEA /DRT - French Alternative Energies and Atomic Energy Commission
CEA Tech is focused on cutting the edge of the technological research and development in the field of energy, IT and health care information. It provides an active role in transferring the knowledge and research ideas into the industry.

CEA LITEN - Alternative Energies and Atomic Energy Commission
Liten plays a decisive role in the development of future technologies for the energy transition and the limitation of greenhouse gas emissions. In order to meet these challenges, the Liten and its ecosystem innovate with the objective of creating value and transferring it to industry and the economic world.

OVERVIEW OF STAKEHOLDERS, COMPANIES AND CORPORATES

INERCO - Energy Technologies
Advanced technical solutions in the environmental field developed in-house.

Lumenion GmbH
LUMENION is a young Berlin-based company and an active contributor to the energy transition. Our patented storage technology stores CO2-free generated electricity in the form of thermal energy and makes it available to industry and utilities as climate-neutral process heat.

Carlsberg Group
one of the world's leading brewery groups. A global brewer, powered by strong local brands.

International Magnesium Association
The mission of the International Magnesium Association (IMA) is to promote the use of the metal magnesium in material selection and encourage innovative applications of the versatile metal. IMA's members consist of primary producers of the metal, recyclers, foundries, fabricators, end-users and suppliers.

Gas Nat. Unipessoal, LDA
Gas Nat is located in Portugal and is part of the Natural Gas Distribution & Marketing Industry.

EIC - EUROPEAN INNOVATION COUNCIL

Europe needs to capitalise on its science, innovative SMEs and start-ups to compete in global markets increasingly defined by new technologies. That is why the European Commission has introduced a European Innovation Council (EIC) to support high-risk, high-impact ideas, turning science into new business and accelerating the scale-up of 'game-changing' innovators shaping the future.

The EIC pilot provides funding and opportunities for innovative researchers, innovators and entrepreneurs - often startups and companies - that are radically different from existing products, services or business models are highly risky have the potential to scale up internationally. The EIC pilot supports ideas from any area of technology or business sector, including novel combinations of technologies and business models. Support is available from feasibility to development to scale-up stages.

For more information on EIC please visit:
EIC pilot | European Commission (europa.eu)
Horizon Europe | European Commission (europa.eu)

INTEREST IN ANY PROJECT OR COMPANY?

PLEASE CONTACT INFO@FETBRIEFING.COM

The "Research meets Industry" event is organized by European Commission in collaboration with the FET BRIEFING project, funded under the Horizon 2020 Programme.
BRIEFING leverages different ways of exploiting FET/EIC Pathfinder research by supporting researchers in their innovation exploration and fostering the connection between the worlds of researchers and different business stakeholder groups.

For any questions related to FET BRIEFING, please contact the project Coordinator
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