Open characterisation and modelling environment to drive innovation in advanced nano-architectured and bio-inspired hard/soft interfaces

OYSTER Open Day 2022 Workshop

AGENDA v1.3

Date: 17 March 2022

Time: 09:30 – 16:00 (CET)

Venue: ZOOM Digital Platform

www.oyster-project.eu

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OYSTER Project Open Day

OYSTER Project Overview:

OYSTER Open characterisation and modelling environment to drive innovation in advanced nano-architectured and bio-inspired hard/soft interfaces

- **OYSTER** uses contact mechanics to bridge adhesion data at multiple length scales and link interfacial adhesion to physicochemical properties.
- **OYSTER** brings Europe's first-class laboratories and SMEs to take existing nanoscale characterisation technologies towards widespread utilisation in process optimisation and model validation.
- **OYSTER** achieves this by sharing metadata in an Open Innovation Environment (OIE), where new paradigms of multi-scale contact mechanics are validated on selected application-oriented reference materials through continuous interaction with the European Materials Characterisation Council (EMCC).

OYSTER Partners have a virtual EXPO at; www.oyster-project.eu/EXPO

Agenda

Please note that times shown in the agenda are Central European.

09:25 *Opening of session*

09:30 **Welcome and Oyster Open Day Introduction**

Marco Sebastiani, Project Coordinator, University "Roma Tre", Italy

Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT)
Oyster Project Open Day 2022 Organiser

09:40 **Marco Sebastiani**, Project Coordinator, University "Roma Tre", Italy

Title: Nanoindentation as a Reliable Tool for Measuring Surface Free Energy Over Five Orders of Magnitude

Surface Free Energy (SFE) has become a relevant design parameter for producing materials and devices with controlled wettability in a wide range of applications, where spatially resolved control of surface properties has become a key enabling technology. In this presentation, recent progresses are presented on the adoption of nanoindentation to measure adhesive forces over small nano-engineered surfaces, in controlled environmental conditions, with an accurate account of instrumentation issues. A novel method to measure SFE over five orders of magnitude is validated on surface treated and nano-patterned surfaces. Its limitations and shortcomings are critically discussed in the context of relevant applications: from complex-geometry contacting surfaces in controlled environmental conditions, the time-dependent measurement of functionalization processes, to smart micro- devices with tuned surface properties. The enabling synergistic context of modelling, characterization, and advanced manufacturing is discussed. Standardization of characterization protocols are also discussed, playing a crucial role in synergistic application of small-scale methodologies.

10:00 **Charles Clifford,** Senior Research Scientist, National Physical Laboratory, UK

Title: International interlaboratory study of adhesion at the nano/micro scale using AFMs and nanoindenters: steps to international standardisation

International standards represent the best practice. They are made by consensus of all stakeholders internationally and allow compatibility and intercomparison of products and

measurements. In this talk I will discuss the route forward to international standardization of adhesion measurements at the nano and micro scale from idea in the laboratory to full international standard.
The first step is method development. The method developed via the Oyster project for adhesion measurement using AFMs and nanoindenters has been verified to investigate repeatability and reproducibility via an international interlaboratory study. In the study each lab was provided with a sample and a procedure to follow and the results from multiple laboratories are compared. In this talk I will detail this study and discuss routes to international standardisation.

10:20 **Michalis Galatoulas,** Mechanical and Aeronautical Engineer, IRES, Belgium

Title: An Open Innovation Environment (OIE) as a basis for future European platforms on characterisation: A feasibility analysis study

OIE is an innovative, web – based environment created within OYSTER project, intended to act as a networking mechanism between manufacturing industry and stakeholders for the characterization of hard / soft materials' interfaces. Within the OIE, commonly agreed validation and measurement protocols are exchanged for the first time, with respect to FAIR data principles, speeding up standardization and time – to – market. In the framework of an OIE Business Plan, a number of surveys were conducted among OYSTER project partners, in order to assess the viability of the platform, including financial projections and risk analysis beyond the end of OYSTER project. The resulting Strategic Plan – that will be continuously updated through the life of OIE by measuring specific Key Performance Indicators - is expected to ensure the viability of OIE, opening new ways for upcoming, similar European platforms.

10:40 **Valeriia Kudriavtceva**, Nanoforce, UK

Title: Biodegradable printed microcapsules and microchambers for drug delivery

Modern methods of encapsulation are still facing a number of unsolved issues including retention of small molecules, non-uniform size and shape of carriers, rapid loss of activity of the drug in vivo and selectivity to encapsulated substance. Our work is focused on the preparation and characterization of printed biodegradable polymer microcapsules and microchambers delivery systems. The method is based on a soft-lithography approach and allows to encapsulate various types of cargoes. The geometry of capsules and microchambers strictly depends on the templates produced by photolithography and various shapes, sizes and aspect ratios of capsules can be achieved according to the needs of the application. The proposed microchamber arrays system is a film of micron thickness with release-on-demand properties and multipurpose application including drug delivery from contact lenses, intraocular lenses and other implants. The process of printed microcapsules is identical to microchambers with added capsules separation and harvesting steps.
Stepping away from the traditional core template-based approach allows the entire inner volume of capsules to be available for active compounds loading, while the shell defines the capsule's geometry, protects the cargo and modulates its release. Such capsules show unique characteristics compared with other drug delivery systems such as a wide range of possible cargoes, triggered release mechanism and highly controllable shape and size. Moreover, printed capsules were found to provide sufficient stability to encapsulate small water-soluble molecules and to retain them for several days and ability for intracellular delivery.
The microchambers and printed microcapsules offer great flexibility for the choice of active substances, regardless of their solubility and molecular weight and offer a variety of applications including catalysis, microelectronics and especially biomedical.

11:00 *Break & visit to virtual exhibition at www.oyster-project.eu/EXPO*

11:20 **Christian Bippes,** Application Scientist / Product Manager, Nanosurf AG

Title: Atomic force microscopy for applications in research and industry

Since its advent in 1986, AFM has evolved from a hard-to-operate instrument for specialists into a widely used and accepted technology. AFM has seen many new developments that nowadays make it a multifunctional toolbox to investigate surface topography as well as nanomechanical and electrical properties of a wide range of materials.
In this presentation, we will show how AFM can be used in research but especially in an industrial setting for quality control. We will also discuss the needs of industrial applications compared to a research environment.

11:40 **Thomas Straub,** Meso- and Micromechanics Group manager, Fraunhofer IWM, Germany

Title: Adaptive Wettability of a Programmable Metasurface

Due to novel additive manufacturing methods such as two-photon lithography, high-resolution 3D microstructures can be prototypically fabricated and highly specific adjustments of the surface structure can be realized. These advances have enabled a field with particularly broad development possibilities in the area of metamaterials. Herein, a novel mechanoadaptive surface with strain-dependent wettability states has been developed. The surface was designed, fabricated, and experimentally characterized with a custom test setup that combines the capabilities of contact angle measurements and mechanical straining in one. The results demonstrate a mechanically induced, topologically driven modification of the surface's wetting properties from the hydrophobic to the super-hydrophobic regime.

12:00 **Yoav Nahshon,** Lead of Software Solutions in Materials Informatics Team, Fraunhofer IWM, Germany

Title: OIE – Open Innovation Environment

The Open Innovation Environment (OIE) is a web-based platform that enables sharing and exchanging of semantic, ontology-based, information across members of the European materials science community.
CHADA, which was also developed as part of OYSTER and used to describe characterization data of a material, is support in OIE. Users may upload and make CHADA files publicly available directly by using the platform. Moreover, by connecting CHADA documents to other resources, such as experts and organizations, and annotating them using ontology terms, OIE creates a network of linked knowledge items that are easily discoverable.

12:20 **Pierluigi Del Nostro,** Ontology Expert, Goldbeck Consulting Ltd, UK

Title: Standardisation and digitalisation of materials characterisation data: a key ingredient of Open Innovation

The huge variety and complexity of materials led to the formation of multiple communities around the materials characterisation field, establishing different terminologies which typically focus on specific application domains.

We here present our contribution on the creation of a common knowledge framework for the documentation of characterisation methods, with the goal of facilitating reusability and transferability of knowledge across different communities and sectors.

12:40 **Networking and visit to the virtual EXPO** *www.oyster-project.eu/EXPO*

13:00 *Lunch break*

14:00 **Matteo Fasano,** Assistant Professor, Politecnico di Torino, Italy
Title: Surface properties of soft material characterized by experimentally-augmented multiscale simulations

The surface free energy of soft coatings determines the adhesion, friction, and wettability response of solid surfaces in several applications of engineering and biomedical interest. However, the multiscale nature of these phenomena limits a bottom-up prediction of the resulting surface properties. In this presentation we show computational experiments to characterize the surface and solid-fluid interface of low-surface-free-energy coatings and materials. In particular, the free energy perturbation approach is first used to evaluate the work of adhesion between polymer surfaces and fluids; then, the Young-Dupré equation is adopted to compute the ideal contact angle. Such molecular dynamics and coarse-grained simulations allow to explore the interfacial properties of soft materials, enabling a more comprehensive understanding of their effect on the adhesion, friction, and wettability of solid surfaces. Differently from standardized experimental approaches, numerical experiments allow to understand and decouple the different mechanisms regulating the wetting properties of soft coatings with atomistic precision. The molecular models are validated against experiments and then used as input parameters for materials modelling at higher scales, such as finite elements simulations, to investigate the contribution of surface topology on wettability, in terms of nano- and micro-roughness or patterning. In perspective, multiscale models linking the chemical and topological characteristics of soft surfaces with their effective response will allow predictive in silico testing of new materials with tunable functionalities.

Guest presentations

14:20 **Luca Belforte**, Centro Ricerche FIAT S.C.p.A, Italy (*Guest speaker*)

Title: Evolution of materials in future vehicles: a new paradigm for the automotive components

There are six main goals of the cars of the future: connectivity, sharing and electrical mobility, personification, sustainability and autonomy are the forthcoming challenges. We will have an elegant and ergonomic design with embedded sensors, clean energy, intelligent surfaces and components and, for that, we have to manufacture our vehicles based on materials that are more intelligent and functional. The materials will be not only intelligent but also customized and they will need continuous adaptation to the new targets. Additionally, the technical integration has to meet the global megatrend of the sustainability. The integration of the functionalities will pass through use of recycling and bio-materials.
However today the use of such materials is challenging in terms of costs, required technologies and the real physical and chemical constrains. Significant strides are being made to characterization methods that are fundamental to investigate the new properties and the new opportunities.

14:40 **Ferry Kienberger,** Keysight Labs, Austria – Guest speaker (*Guest speaker*)

Title: New applications in battery materials and energy devices

The reliable electrical testing and diagnostic evaluation of battery cells is an important task in industrial automotive manufacturi¬¬¬¬¬ng, in battery quality control, and in battery recycling. In the first part we show different materials characterization and battery test methods, including advanced calibrations and error correction methods. Standard operating procedures (SOPs) are provided for electrochemical impedance spectroscopy, including metrological evaluation of accuracy and error sources. The SOPs are currently evaluated in round-robin tests together with OEMs and national metrology institutes, also within the frame of the ongoing EU H2020 project ‘NanoBat’. Additionally, we show how the test data is used as input data to modeling algorithms to extract the equivalent electrical circuit parameters of the cell, relevant for evaluating the SoH (State of Health) and second life applications of batteries. Interoperable CHADAs and MODAs are developed, putting together electrical and nano-mechanical data, particularly done in the frame of the ongoing EU H2020 project ‘nanoMECommon’. Overall, we

provide interoperable data formats for tests of energy materials and devices that interact with the larger scientific and industrial ecosystem, thereby providing robust industrial use cases for battery manufacturing Gigafactories**.**

15:00 **Ennio Tito Capria,** European Synchrotron (ESRF), France (*Guest speaker*)

Title: Fully exploiting the potential of the ESRF as an Innovation Hub: actions and opportunities in the framework of publicly funded initiatives

As reported in the ESFRI 2018 strategy report, the role of Research Infrastructures (RIs) is evolving. From an originally independent approach, they are becoming more and more part of a connected ecosystem forming a unique resource for advanced research and interdisciplinary analysis of complex scientific problems. RIs, as providers of cutting-edge scientific solutions, advanced services and data, have an innovation potential that needs to be fully exploited to ensure maximum return and therefore financial and societal long-term sustainability and acceptance. There are, however, many significant challenges to fulfil this potential: translational issue, lack of awareness by the industrial users about the opportunities of RIs, entry barriers for access, as well as insufficient human resources at the interface between RIs and the private sector. Some of these challenges can be met by creating a more efficient integrated and coordinated ecosystem for RIs and Industry in which every player in the socio-economic value chain is involved.
Various opportunities for funding are today available at European, National and Regional level to finance research activities targeting academic and industrials. All these initiatives leverage a support to the so-called Open Innovation. These findings can offer a strategic support to the possibility to constitute relevant platforms enhancing the synergies between the industrial sector and appropriate research infrastructures.
In this talk we will describe the case of the European Synchrotron (ESRF). We will describe the constitution of an Innovation Hub supported with public fundings, in particular from the instrument H2020-NMBP-TO-IND, as a pilot actions that can serve as inspiration for similar context.

15:20 **Discussion**

Discussion facilitated by: Bojan Boskovic

- Experience in using CHADA in different applications and projects.
- Steps needed and lessons learnt in bridging gaps and bringing together modelling and characterisation.
- EMCC role and related activities in clustering characterisation projects and supporting collaboration.

16:00 *Closing remarks*

Note *It is planned that all presentations would be followed by Q&A discussion. The organisers reserve the right to change the programme, speakers or venue should circumstances require. For any further enquires please do not hesitate to contact directly the* ***OYSTER Exploitation and Dissemination Manager*** *Dr Bojan Boskovic on info@oyster-project.eu or Bojan.Boskovic@CNT-Ltd.co.uk or on his mobile phone +447780874335.*

OYSTER Open Day 2022 - Speakers

OYSTER Project Partners Speakers

Dr. Eng. Marco Sebastiani (OYSTER Partner)
Assistant Professor
University of Roma Tre
Materials Science and Technology
Via della Vasca Navale, 79 - 00144
Rome, Italy

Dr Marco Sebastiani is currently a recognised scientist in the fields of surface engineering, thin film synthesis, nanoscale mechanical characterisation, residual stress assessment at the nano-scale.

In the last ten years, the PI was awarded with a Fulbright Scholarship, have already coordinated three large European projects (Horizon Europe, H2020 and FP7) and a large national project (PRIN2020). He has pioneered a novel method to measure residual stress at small scales (namely, the FIB-DIC micro-ring core), as well as an original methodology to measure fracture toughness at the micro-scale (namely, the pillar splitting method).

Dr. Bojan Boskovic (OYSTER Partner)
Managing Director
Cambridge Nanomaterials Technology Ltd
Cambridge
UK

Dr Bojan Boskovic has more than 20 years of hands-on experience with carbon nanomaterials and composites from industry and academia in the UK and Europe. Previously, he worked as a R&D Manager at Nanocyl,. He also worked on carbon nanotube synthesis and applications as a Principal Engineer-Carbon Scientist at Meggitt Aircraft Braking Systems, as a Research Associate at the University of Cambridge, and as a Senior Specialist at Morgan Advanced Materials. During his PhD studies at the University of Surrey he invented low temperature synthesis method for production of carbon nanomaterials that has been used as a foundation patent for the start-up company Surrey Nanosystems. He was a member of the Steering and Review Group for the Mini-IGT in Nanotechnology that advised the UK Government on the first nanotechnology strategy policy document. Dr Boskovic was working as an advisor for the European Commission (EC) on Engineering and Upscaling Clustering and on setting up of the European Pilot Production Network (EPPN) and European Materials Charaterisation Cluster (EMCC). He has experience in exploitation and dissemination management on a number of FP7 and H2020 European projects, including UltraWire, NanoLeap, OYSTER, M3DLoC, Genesis and nTRACK. Also in UK Government InnovateUK funded projects, such as UltraMAT and GRAPHOSITE He is also a leader of a private Nano-Carbon Enhanced Materials (NCEM) consortium.

Dr. Charles Clifford (OYSTER Partner)
Senior Research Scientist
National Physical Laboratory
Hampton Road, Teddington,
TW11 0LW,
UK

Dr Charles Clifford is a senior research scientist in the Surface Technology Group at the National Physical Laboratory, the UK's national metrology laboratory. He has extensive experience in surface analysis, nanoscience measurement and characterization and international standardization. He is head of the UK delegation to ISO/TC229 (nanotechnologies), CEN TC 352 (European nanotechnologies) and IEC TC113 (electrotechnical nanotechnologies). He leads and participates in collaborative projects with a focus on nanomaterials and analysis at the nanoscale. These include projects on graphene

standardization through to measurement of nanoparticles in tissues. He has a background in scanning probe microscopy with a focus on developing and understanding scanning probe microscopy techniques in order to give quantitative information on a surface at the nanoscale beyond 'pretty pictures'.

Michalis Galatoulas (OYSTER Partner)
Mechanical and Aeronautical Engineer
IRES - Innovation in Research and Engineering Solutions
Belgium

Michalis Galatoulas holds a Mechanical Engineering and Aeronautics Diploma followed by an MSc in Financial and Management Engineering. During his professional career, he has worked on numerous co-funded EU projects in Aerospace, Composite Materials and Renewable Energy Systems, in terms of Design Optimisation & Decision Making.

Valeriia Kudriavtceva (OYSTER Partner)
PhD student
Nanoforce
Queen Mary University of London
Mile End Road
London E1 4NS
UK

Valeriia Kudriavtceva is a PhD student at the Queen Mary University of London and a participant from Nanoforce Technology Limited the spin-off company at QMUL. She did her master's and bachelor's degree at Tomsk Polytechnic University. Her current research goals are directed towards Material Science and in particular drug delivery systems.

Dr Christian Bippes (OYSTER Partner)
Application Scientist / Product Manager
Nanosurf AG
Gräubernstr. 12
4410 Liestal
Switzerland

Dr Christian Bippes is an AFM expert with more than 18 years of AFM experience in an academic and industrial environment. During his PhD at the Technical University Dresden and a Postdoc at the ETH Zürich in Basel, Christian focussed on high-resolution imaging and single-molecule force spectroscopy of bio-macromolecules. Since more than 9 years he is working as Application Scientist and Product Manager at Nanosurf helping customers to master their AFM and reach their goals as well as bringing new innovative products forward.

Dr. Thomas Straub, (OYSTER Partner)
Meso- and Micromechanics Group Manager
Fraunhofer IWM
Wöhlerstrasse 11
79108 Freiburg
Germany

Dr. Thomas Straub got his PhD degree on the crack initiation in the Very High Cycle Fatigue regime of micro samples from the KIT, Karlsruhe, Germany in 2015. Since then, he is leading the group Meso and Micromechanics at the Fraunhofer Institute for Mechanics of Materials.
Applying self-developed test setups and experimental mechanics, the group can determine the material properties of samples with at least one dimension in the microscale. The testing of micro-parts is a routine, the micro sample preparation from larger components as well. This allows the group to determine the local material characteristics of critical parts. Our aim is to contribute to current material

models, the design of metamaterials, the optimization of local materials properties and the understanding of size effects, which frequently appear in micro-regime samples.

Yoav Nahshon (OYSTER Partner)
Lead of Software Solutions in Materials Informatics Team
Fraunhofer IWM
Wöhlerstraße 11
79108 Freiburg
Germany

Mr. Yoav Nahshon (male) has received his M.Sc. degree in Computer Science from the Technion - Israel Institute of Technology. As a member of the Data and Knowledge Lab, his main focus of study was databases and Information Extraction.

In February 2019 he joined Fraunhofer IWM to partake in the emerging field of Materials Informatics and currently leads the team "Software Solutions in Materials Informatics" whose activities aim prompting interoperability and the FAIR data principles in German and European projects.

Dr. Matteo Fasano (OYSTER Partner)
Assistant Professor
Politecnico di Torino | Department of Energy
Corso Duca degli Abruzzi, 24
10129 Torino - ITALY

Dr Matteo Fasano is an Assistant Professor and co-Director of the Multi-Scale Modelling Laboratory – SMaLL at Politecnico di Torino. He completed the Ph.D. in Energy Engineering and Nanotechnology at Politecnico di Torino in 2015. During doctoral studies, Matteo was one-year research fellow at the Department of Nanomedicine of the Houston Methodist Research Institute (Houston, TX-USA) and visiting researcher at the Massachusetts Institute of Technology (Cambridge, MA-USA). He also collaborated with scientists from Imperial College (London, UK) and University of Minnesota (Minneapolis, MN-USA). His doctoral thesis was awarded as the best Ph.D. research by the Energy Department of Politecnico di Torino in 2015 and by the ENI Award in 2017, which is considered as the most prestigious prize for young scientists in the energy field. Since 2014, he has (co-) authored over 55 publications, including highly cited articles on Nature Communications, Nature Sustainability and Science Advances. He has been active for more than ten years in modelling heat and mass transfer in a broad variety of applications. In particular, bio/nanotechnologies, colloidal suspensions, soft interfaces and nanoporous materials have been studied by various approaches, including atomistic (molecular dynamics, Monte Carlo), mesoscopic (coarse-grained) and continuum modelling techniques, as well as machine learning tools. Dr. Fasano is currently involved in several European and national research projects dealing with multiscale simulations of nanostructured materials for applications spanning from the biomedical to the energy field.

Dr Pierluigi Del Nostro (OYSTER Partner)
Ontology Expert
Goldbeck Consulting Limited
St John's Innovation Centre
Cambridge
CB4 0WS
United Kingdom

Dr Pierluigi Del Nostro earned a PhD in Computer Engineering at the Roma Tre University. His research activity is mainly focused on semantic Web technologies, knowledge management, databases and translations between heterogeneous data models, which led to publications on international conferences and journals. Additionally, he has more than 15 years of professional experiences in IT,

starting with software design and development, and later progressing to include the role of Project/Product Manager and Business Developer. He participated in several European and national projects in the fields of ontology modelling and software architecture.

OYSTER Guests speakers

Dr Ferry Kienberger – Guest speaker
Country Manager
Keysight Labs Austria
Austria

Dr. Ferry Kienberger is Keysight Austria Country Manager and Keysight Labs Linz Group leader on battery science. Prior to this he was Scientist at Agilent Technologies working on nanotechnology. His University education includes a PhD in 2002 on Technical Physics and the Habilitation in Nanotechnology at JKU Linz in 2019. The scientific track record includes 140+ scientific peer reviewed publications (including Nature Publishing Group, AAAS Science, PNAS USA, and IEEE Transactions) with an H-factor 40 and 5000+ citations; he supervised 10 PhD theses. He is coordinator of EU project NanoBat and lead partner in 15+ projects for Keysight and Agilent, 7 national projects, 4 international projects (Economic Development Board EDB Singapore and EU/ATTRACT), and 3 EMPIR metrology EU projects. He serves as a vice-chair for the EU H2020 program and is a former member of OECD BIAC (Business and industry advisory council) for Nanotechnology.

Dr Luca Belforte. - Guest speaker
Head of Physical and Chemical Methods Department
CRF
Strada Torino 50,
10043 Orbassano
Italy

Dr Luca Belforte. General Physics, University of Torino, 2003. He currently works at Centro Ricerche FIAT (CRF) in the Material Engineering division as Head of Physical and Chemical Methods department. He is experienced in microscopy and surface characterization. He was the scientific responsible for CRF of H2020, FP7 and FP6 European funded projects: E-STARS, NANOPRIM, TERASEL, SMARTONICS, NANOBAT, NANOMECOMMONS.

Dr Ennio Tito Capria - Guest speaker
European Synchrotron (ESRF),
France

Dr Ennio Tito Capria is the Deputy Head of Business Development at the ESRF. In his research career he worked on the development of electrochemical nanobiosensors, nanocomposites and optoelectronic devices and particularly their characterisation with synchrotron light. At the ESRF, he is coordinating the participation of the ESRF in various collaborative initiative with industry, in particular on energy storage applications, additive manufacturing methods and nano-sciences. Since 2020 Ennio is Director of the Characterisation programme of the Technological Research Institute Nanoelec.

OYSTER Project Open Day 2022 – Delegates

Dr Donna Dykeman (External participant)
R&D Manager, Collaborative R&D
Ansys UK
97 Jubilee Avenue,
Milton Park, Abingdon,
England, OX14 4RW

Dr Donna Dykeman is the R&D Manager for the Collaborative R&D Team at the Materials Business Unit, Cambridge UK, Ansys UK, and has worked in the area of materials information management for ten years. Prior to joining Ansys, Donna performed research in materials and process characterization related to polymers and composites manufacturing. She has a BSc and MSc in Mechanical Engineering and PhD in Materials Engineering.

Dr Davide Di Stefano (External participant)
Ansys UK
97 Jubilee Avenue,
Milton Park, Abingdon,
England, OX14 4RW

Dr Davide Di Stefano is a Senior Project Manager in the collaborative R&D team, responsible for projects in the integrated computational material engineering (ICME) area. Prior joining Ansys, Davide worked 6 years as researcher in discrete materials modelling across multiple scales, materials, and industries.

Dr David MERCIER (External participant)
Sr Development Manager for Education and Research
Ansys Inc
Immeuble le Patio,
35-37 Rue Louis Guérin,
69100 Villeurbanne, France

Dr David MERCIER holds a PhD in material science from Grenoble Univ. and his technical background is related to µelectronic and to metallurgy. He was involved in several successful postdoctoral research projects in Germany and Belgium during 6 years, in the field of multiscale modelling and mechanical characterization of materials using nanoindentation. He is now part of CTO team at Ansys supporting educational and research institutions EMEA as senior development manager.

Iban Quintana (External participant)
Coordinator of strategic actions on Material Characterisation and Surface Engineering
Fundación TEKNIKER
C/ Iñaki Goenaga 5.
20600, Eibar, Gipuzkoa,
SPAIN

Dr Iban Quintana obtained his Doctoral degree from Basque Country University (UPV - EHU) and Donostia International Physics Centre (DIPC) March 2007, working on the effect of temperature in the molecular dynamics of engineering thermoplastics. He joined TEKNIKER in 2007, focusing his

research activity on the material response to machining with pulsed laser characterised by different pulse duration (fs, ps and µs). In 2007, he was a visitor researcher at Manufacturing Engineering Centre (MEC), Cardiff University, working on experimental and simulation aspects of laser micromachining with ps pulses. From 2011 to December 2016, he was the Head of the Ultra-Precision Processes Unit at TEKNIKER, focussing the activity on developing high value-added products based on advanced micro-manufacturing and ultra-precision technologies. In that period, his research group participated in five European project funded by EU under the FP7, coordinating two of them (HINMICO: http://hinmico.eu/ and NEURIMP: http://neurimp.eu/). From January 2017, Dr. Quintana is in charge of the Advanced Materials and Surfaces Group at TEKNIKER which is formed by 60 researchers. He is author of over 40 peer reviewed international publications and 1 patent.

Dr Gottlieb Georg Lindner (External participant)
RD&I
Evonik Operations GmbH
Bruehler Str. 2
Wesseling
50389
Germany

Dr Gottlieb Georg Lindner has been working on nanomaterials (especially of nanostructured type) since more than 25 years; being active in standardization committees (DIN/CEN/ISO), the OECD as well as in several EU-projects dealing with NMs like NanoPAT

Federico Bruno (External participant)
PHD Student
University of Turin
Via Verdi 8
10124 Turin;
Italy

Federico Bruno is a material scientist. Currently, attending the PhD Programme in “Innovation for the Circular Economy” at University of Turin, Department of Chemistry

Dr Enrique Lozano Diz (External participant)
Managing Director
ELODIZ Ltd
Unit 29, Riverside Business Centre,
Victoria St, High Wycombe
HP112LT , High Wycombe,
Bucks, UK

Dr Enrique Lozano Diz holds a PhD in Chemistry and has over 15 years of experience working with laser-based instrumentation, its development and commercialisation. He is the founder of ELODIZ Ltd, which has been supporting the development of Raman spectroscopy since 2012. Today, ELODIZ manufacturers Raman devices and a portfolio of other analytical equipment. Enrique works with a number of customers of the development of new on-demand analytical techniques. Under his management, ELODIZ has become an integral member of the CHARISMA Consortium, in particular with WP3, that designs and verifies the new protocols for Raman harmonisation, and WP6 developing new Raman devices and techniques for the industrial partners. He is author of over 30 papers and 1 patent.

Dr.Raquel Portela (External participant)
Tenured scientist
CSIC
Calle de Serrano, 115 bis
28006, Madrid,
Spain

Dr.Raquel Portela has a PhD in Chemical, Environmental and Process Engineering (USC, 2008). She is working at the CSIC, Instituto de Catálisis y Petroleoquímica (ICP), Madrid, Spain, as tenured scientist since 2000. Her current research lines are related with the use of operando spectroscopy to better understand catalysis and nanomaterials, and with the development of functional cellular ceramics for process optimization and intensification. She has more than 15-year experience in air pollution control by (photo)catalysis and adsorption, and in catalytic reactions of industrial interest. She is co-coordinator of CHARISMA project on Raman harmonisation and participant in several European and national projects.

Dr Miguel Bañares (External participant)
Full Research Professor
CSIC
Calle de Serrano, 115 bis
28006, Madrid,
Spain

Dr Miguel A. Bañares is Research Professor, Editor-in-Chief, Catalysis Today (Elsevier, Impact Factor 5.825) and co-Editor of Springer Handbook of Advanced Catalyst Characterization. Obtained his PhD in 1992 (University of Salamanca, 1992). He was Chairman, Management Committee of COST Action D36 (ESF), 2006-2011and is Vice-Chairman, Management Committee of COST Action TD1404 MODENA (ESF). Doctor Honoris Causa, Université de Caen Normandie, France in 2017

Bañares catalysis research focuses on understanding catalysis by combining in situ and operando analyses with computational description of the structure, spectra and reactivity of the catalysts. He applies his catalysis research to understand the reactive basis of nanoparticle toxicity He is active on Raman spectroscopy real- time reaction monitoring of reactions and functional materials state at work. Bañares is co-author of >225 papers, with an h index 47, with more than 48 plenary/keynote lectures.

Dr. Gerald Kada (External participant)
Keysight Technologies Austria
Gruberstrasse 40
4020 Linz,
Austria

Dr Gerald KADA (male), is a business process officer and project manager in Keysight Austria (20+ years' experience in various project management roles including EU projects, Keysight sales teams on nano-instrumentation, R&D teams, and business development manager for the nanotech-EU market). He has a scientific record of >40 peer-reviewed publications, and more than 3700 citations with an h-index of 24.

Dr. Javier Gomez (External participant)
Administrator
ADVANCED MATERIAL SIMULATION SL
C\Elcano 14 1º Derecha
Bilbao, Bizkaia
48008 Spain

Dr Javier Gómez (male) has developed expertise in the Department of Materials Science of the University of Madrid, as a teacher and researcher, and in the aeronautical industry (ITP). He has experience in: managing mechanical testing machines, finite element modeling (COMSOL, ABAQUS, ANSYS, WARP3D), numerical computation and programming (FORTRAN, MATLAB, PYTHON), industrial design of low-pressure turbines and diverse works as an expert analyst in the field of Structural Integrity, Fracture Mechanics, Continuum Mechanics and Materials Science. Within its activity as a researcher the principal subjects are fracture due to notches, fracture of concrete, algorithm development, machine learning and the application of Artificial Intelligence to determine material properties from non-conventional tests. Dr Javier Gomez has published 25 scientific and technical papers in peer reviewed International Journals and has participated in more than 50 National and International Conference. The H-index of Javier Gomez is 19 and the total number of citations is more than 2800 (www.researchgate.net).

Dr. Olivier DOUHERET (External participant)
R&D Scientist
Materia Nova R&D Center
Parc Initialis
Avenue Nicolas Copernic 3
B-7000 Mons Belgium

Dr. Olivier DOUHERET has a Civil Engineer degree in Physics from Polytechnic national institute of Grenoble, France – Specialty: Material science. He got his Doctoral degree in Semiconducting Materials from KTH, Royal Institute of Technology, Stockholm, Sweden – Topic: scanning probe microscopy (SPM) for electrical characterization of III-V materials. He has a Postdoctoral degree at IMEC division IMOMEC, Diepenbeek, Belgium: Topic electrical SPM for organic electronic materials and devices. He is currently a R&D Scientist at Materia Nova, Mons, Belgium: fabrication, characterization of hybrid electronic devices.

Dr Thurid Gspann (External participant)
NanoMat Project Leader
Institute of Nanotechnology, Karlsruhe Institute of Technology
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen
Germany

Dr Thurid Gspann is a project leader in the NanoMat cluster, based at the Institute of Nanotechnology of the Karlsruhe Institute of Technology. She is involved in several European projects, amongst others the Graphene Flagship, in which she leads the standardisation task. As technical expert, she is a member of the international standardisation committees ISO and IEC and co-chairs the German DIN committee for nanotechnology.

Dr Gspann can draw from 15 years of experience in the field of materials science and specifically carbon nanomaterials, and worked at nameable universities such as the University of Cambridge, UK, and the National University of Singapore.

Dr. Rostislav Daniel (External participant)
Associated Professor, Senior lecturer, Head of a group for
Design and Architecture of Functional Materials Systems
Montanuniversität Leoben
Department of Materials Science
Franz-Josef-Straße 18
8700 Leoben
Austria

Dr Rostislav Daniel is an associated professor and a senior lecturer at the Department of Materials Science at the Montanuniversität Leoben (AT), heading a group for Design and Architecture of Functional Materials Systems. His main scientific focus is on design and architecture of advanced

hierarchical multifunctional nanostructured films and functionalization of their interfaces across multiple length scales. In his research, he is addressing processing-structure-stress-property relationships in nanostructured thin film materials characterized by advanced in-situ analytical methods including high-end tools for structural and stress characterization and micromechanical testing.

Dr Caroline Boudou (External participant)
Industry Contact Officer
Institut Laue-Langevin
71 avenue de Martyrs
38000 Grenoble
France

Dr Caroline Boudou joined the Laue-Langevin Institute in 2016 as Industry contact officer. She is in charge of customer management and development of collaborations with Industry while raising awareness about the use of neutron techniques. She studied applied Physics and she spent her PhD time at ESRF, working on dosimetry for radiotherapy. She worked for seven years in large and small companies managing upstream studies programs and customer projects, in the field of direct conversion x-ray detectors.

Dr. Luca Magagnin (External participant)
Professor of Surface Engineering and Applied Electrochemistry
Dept. Chemistry, Materials and Chemical Engineering Giulio Natta,
Politecnico di Milano
Via L. Mancinelli, 7 - 20131 Milano –
Italy

Dr. Luca Magagnin is an Associate professor, at the Politecnico di Milano. Hisresearch interests include the electrochemical and electroless deposition and the characterization of metallic, semiconductive and dielectric films for microelectronics, surface treatments and energy storage; the development of novel electrochemical processes for the practical fabrication of sensors and devices, and the investigation and optimization of electrochemical methods for the synthesis of nanostructures. The interests also include electrochemical processes for environmental remediation and the development of new redox flow batteries.

Dr Nuria Cuadrado (External participant)
Senior Researcher and Project Manager
Fundació Eurecat
Plaça de la Ciència, 2, 08242 Manresa, Barcelona
Spain

Dr Nuria Cuadrado has a PhD in Materials Science and Metallurgical Engineering from the Polytechnic University of Catalonia (UPC) with the qualification of “Cum Laude” since 2013. Previously she obtained the degree of Physics from the University of Barcelona (UB) in 2004 and later, the degree of Materials Engineering and Materials Science form Polytechnic University of Catalonia (UPC) in 2006. Her main lines of research are the nano and micromechanical characterization, residual stresses, advanced microstructural characterization (SEM, EBSD) and tribological behaviour. She is part of Eurecat staff since 2007.

Sergi Parareda Oriol (External participant)
Fundació Eurecat
Spain

Sergi Parareda is a researcher of the mechanical behaviour line of the Metallic and Ceramic materials unit at EUT. He has been a researcher at EUT since 2015 with a short period of time at Scania Tekniskt centrum. His areas of expertise include materials technologies; materials manufacturing and transformation technologies; study of metallic materials forming; fatigue and fracture toughness behaviour of metals.

Dr. Malgorzata Celuch (External participant)
co-founder
QWED Sp.z o.o.
ul. Krzywickiego 12/1
02-078 Warsaw
POLAND

Malgorzata Celuch received International Baccalaureate (honours) at the United World College of the Atlantic, UK. She then graduated from the Warsaw University of Technology, receiving M.Sc. (honours) and Ph.D. (honours) in 1988 and 1996, respectively. Since 1996 she has been Assistant Professor at the Warsaw University of Technology. Her main fields of research are electromagnetic modelling of microwave circuits and numerical methods for computational electromagnetics, including conformal FDTD methods, higher- order modelling of media interfaces, new applications of FDTD with enthalpy-dependent material parameters, and frequency-domain parameter extraction from FDTD simulations.

Dr. Celuch is author of over 120 publications including 18 journal papers (6 in the IEEE series). She has acted as reviewer for IEEE Transactions on Microwave Theory and Techniques, IEEE Transactions on Antennas and Propagation, IEEE Microwave and Wireless Components Letters, Journal of Microwave Power and Electromagnetic Energy, Applied Computational Electromagnetics Society Journal, IEEE Antennas and Propagation Society Magazine, International Journal of Infrared and Millimeter Waves, Physica Status Solidi B, Computer Physics Communications, and Wydawnictwa Komunikacji i Lacznosci. She is TPC member of IEEE MTT-S International Microwave Symposium since 2002, Microwave Materials and Applications Conference MMA-2010, and ANTEM 2010. She has been invited speaker, session organiser, and session chair at numerous conferences. Since 2008, she has acted as expert for the European Commission.

Dr. Celuch is IEEE member and served as co-chair of IEEE AES/AP/MTT Joint Chapter, Section Poland, in 2007-2008. She is founding member of Polish UWC Association (Towarzystwo Szkól Zjednoczonego Swiata im. prof. Pawla Czartoryskiego, http://www.uwc.org.pl/).

Malgorzata Celuch is co-author of QuickWave software, co-founder and President of QWED.

Andrej Kobe (External participant)
PO chez
European Commission
Brussels Metropolitan Area
Belgium

Andrej Kobe is a Policy Officer, Sustainable Chemicals, DG Environment, European Commission. Andrej studied physics at the University of Ljubljana (SI), followed by research on environmental sensing at the National Chemical Institute and the University. Since 1999, he worked at the ambient air quality network and calibration laboratory at the Environment Agency of Slovenia.

Georgios Konstantopoulos (External participant)
Researcher, Project Manager
National Technical University of Athens– R-Nano
9 Heroon Polytechniou St.
Zographos, Athens (GR-157 73)
Greece

Georgios Konstantopoulos is a chemical engineer with a strong academic background. Hardworking, organised and self-motivated now seeking an interesting and challenging position in materials research. Over the years he has more than 7 years of experience in EC-funded projects, while he has published 13 papers in well renowned journals, including Materials & Design and Cement and Concrete Composites, with an h-index equal to 6 (excluding self-citations).

Main interests: 1) Green Synthesis and Characterization of 1D and 2D carbon nanostructures and nanoreinforced composites; 2) Process optimization and upscaling; 3) Nanoindentation; 4) Informatics in Materials Science using AI; 5) Carbon FIber Technology.

Devendra Joshi (External participant)
Co-Founder
TEMAS Solutions GmbH
Lätteweg 5
5212 Hausen (AG),
Switzerland

Devendra Joshi has a background in Business and IT and bring experience in the design and development of business processes (incl. ISAE-3402 control processes). Further, he can support your Quality Assurance efforts in IT. He is currently involved in data management and long-term product and financial sustainability assessments of high-tech products in consortia projects.

Dr. Welchy Leite Cavalcanti (External participant)
Fraunhofer IFAM
Germany

Dr. Welchy Leite Cavalcanti is a theoretical physicist with strong background in computer simulations working in the “Applied Computational Chemistry” group at IFAM since 2008. Before joining IFAM, she worked as postdoc in computational science in the groups of Prof. Florian Müller-Plathe (Bremen and Darmstadt – 2003 to 2006) and Prof. Thomas Frauenheim (Bremen - 2006 to 2008). Besides her scientific activities on the computational modelling to investigate properties of polymeric materials, she has established and coordinated several ongoing collaborations and exchange programs in Europe, and between Europe and Brazil. She is active in international project management, and presently coordinates the H2020 project VIMMP (Grant no. 760907).

Dr Rui de Oliveira (External participant)
Research Scientist
BASF SE
Germany

Dr Rui de Oliveira got his PhD from Le Mans Université. He has been working as Research Scientist for BASF since 2012.

Dr Ioannis Bagkeris (External participant)
CFD Engineer
Unilever
UK

Dr Ioannis Bagkeris got his PhD in Computational Fluid Dynamics from The School of Mechanical, Aerospace and Civil Engineering at the University of Manchester. He is a CFD Engineer at Unilever since 2019.

Dr Michael Noeske (External participant)
Project manager
Adhesion and Interface Research
Fraunhofer IFAM
Wiener Strasse 12
28359 Bremen, Germany

Dr Michael Noeske's joint research at the Department of Adhesive Bonding Technology and Surfaces, Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM in Bremen, Germany, is around adhesion-based phenomena and currently focuses on exploiting the potential of molecularly thin and fittably sticking polymeric interfactant layers for technological applications. A current joint project is 'CO2 mittigation by its use as raw material for hybrid inorganic-organic composites and polymers.

Dr. Federico Sket (External participant)
Researcher
IMDEA Materials Institute
28906, Getafe, Madrid
Spain

Dr. Federico Sket holds (since July 2015) a researcher position at the IMDEA Materials Institute as head of the “In-situ processing and mechanical characterization of materials” Group and a “Venia Docendi” at the “Master in Material Engineering” (since 2013) at the Technical University of Madrid (Universidad Politécnica de Madrid). Previously to joining IMDEA Materials he has formed and developed his research carrier in several prestigious research centres and universities in Europe and Argentina. He has obtained his electrical engineer degree at the National University of Comahue (Argentina), where he has received a scholarship to carry out his bachelor thesis at the Technical University of Vienna -TUW- (Austria) in the field of Material Science. Later on he has joined the Max-Planck Institute for Iron Research -MPIe- (Germany) where he has carried out his PhD in mechanical and material engineering, and defended his PhD at Bochum University, Faculty of Mechanical Engineering, (Germany). In 2010 he has joined IMDEA Materials as a post-doc. During this period he had an international stay at TUW for 3 months as part of an integrated action from Spanish government “acción integrada del gobierno español”. Since 2015 he holds a researcher position at the IMDEA Materials Institute.

Dr Christoph Geers (External participant)
CEO & Co-Founder
NanoLockin GmbH
c/o Colab Fribourg
Route de la Fonderie 2
1700 Fribourg, Switzerland

After his bachelor's degree in biotechnology in Emden and a subsequent master's degree in biomedical engineering in Sigmaringen, **Christoph Geers** went to Fribourg, Switzerland, to do his doctorate in materials science at the Adolphe Merkle Institute in 2016.

In 2018 Mr. Geers Co-Founded the company NanoLockin, where he remains Managing Director to this day.

Paolo Vigo (External participant)
Research grant recipient
Politecnico di Torino
Corso Duca degli Abruzzi, 24
10129
Torino TO
Italy

Paolo Vigo has a Bachelor's degree at Politecnico di Torino in Mechanical Engineering (2016-2019), final mark: 109/110. Thesis on hydrogen embrittlement in steels and titanium alloys.

Master's degree at Politecnico di Torino in Mechanical Engineering (2019-2021), final mark 110/110 cum laude. Thesis on protein functionality classification for bio-inspired water desalination.

Research grant recipient (2022-now), currently working on development of neural network models for energy data analysis. Article regarding master's thesis to be published soon.

Marina Provenzano (External participant)
Visiting staff
Politecnico di Torino
Corso Duca degli Abruzzi, 24
10129
Torino TO
Italy

Marina Provenzano is a Visiting staff at the Politecnico di Torino.

Patricia JEANDEL (External participant)
Executive Director
Cristal innov
France

Patricia JEANDEL got her Master's degree from Manchester Metropolitan University. She has been in the role of Manager since 2010 at Cristal innov : technology Institute for innovation in crystal growth, process, and crystal-made products.

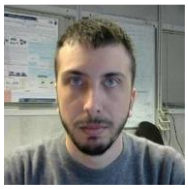
SAQIB RASHID (External participant)
Post-doctoral researcher
Università degli Studi Roma Tre
Via Della Vasca Navale 79,
00146 Roma
ITALY

SAQIB RASHID is working as post-doctoral researcher after completing my Ph.D, in Mechanical and Industrial Engineering.

Otello M Roscioni (OYSTER Partner)
Consultant
Goldbeck Consulting Limited
St John's Innovation Centre
Cambridge CB4 0WS
United Kingdom

Otello M. Roscioni graduated in Chemistry at the University of Rome La Sapienza, earned a PhD at the University of Southampton, and worked as a postoctoral researcher at the University of Bologna, before joining GCL in 2022 as a scientific consultant.

His research expertise is in electronic, atomistic and mesoscopic materials modelling and includes the use of electronic-structure methods, force field parametrisation, molecular dynamics, and data analysis. He is one the leading developers of the MOLC model, a coarse-grained force field for multiscale simulations, implemented in the open-source programs LAMMPS and Moltemplate.



Edoardo Rossi (OYSTER Partner)
Research Fellow
Università degli Studi Roma Tre
Roma
ITALY

Edoardo Rossi is a research fellow at Roma Tre University, achieving a Ph.D. degree in Mechanical and Indusial engineering (Materials Science). My research activities are focused on the characterization and modelling of nano-engineered materials, surfaces, and their interplayed role, along with environmental parameters, in determining materials performances.

Dr Panagiotis Kavouras (OYSTER Partner)
Senior Researcher
National Technical University of Athens
Athens
Greece

Dr Panagiotis Kavouras is a Physicist by degree, with an MSc in Materials Science and Technology and a PhD in Physics focused on Technology of Materials. Currently, his main research interests are characterization of mechanical properties with indentation methods at various length scales and the built up of a metrological approach for the calculation of Surface Free Energy through nano-indentation. His early career research interest was synthesis and characterization of vitreous and glass-ceramic silica-based materials for industrial solid waste management. Another side of his activities are funnelled through his participation in H2020 "Science with and for Society" and Horizon Europe projects, while he has participated in a Tender project related with Dual Use research in key enabling technologies. He is a member of the European Network of Research Integrity Offices (ENRIO) and of the European Network for Ombuds in Higher Education (ENOHE).

David Cant (OYSTER Partner)
Higher Research Scientist
National Physical Laboratory,
Hampton Road,
Teddington,
TW11 0LW UK

David Cant joined NPL in 2015 as a Higher Research Scientist, where his work has focussed on the use and development of X-ray Photoelectron Spectroscopy (XPS) measurements, particularly for the analysis of nanoparticles and nanostructures. David has worked on several projects around the

development of methodologies for the measurement of coating thickness and composition of nanostructured materials using photoemission spectroscopies, and has an active interest in the development of next-generation photoemission spectroscopy techniques such as Higher-Energy X-ray Photoelectron Spectroscopy (HAXPES) and Cryo-XPS for the analysis of soft matter nanomaterials.

David is an active member ISO TC/201 on surface chemical analysis, in which he is an expert on SC 7 – Electron Spectroscopies.

Dr. Ehtsham-ul Haq (OYSTER Partner)
University of Limerick
Ireland

Dr. Ehtsham-ul Haq is a Senior Research Fellow at the Department of Physics/Bernal Institute University of Limerick. Before his current role he was a Science Foundation Ireland/ Analog Devices International Industry Research Fellow at the Bernal Institute of University of Limerick. His expertise spans over preparation and characterization of materials for Biological, magnetic, optical and electrical sensors and devices. He has a track record in the development and extensive use of Atomic Force Microscope, Scanning Near field Optical Microscope and scanning tunnelling microscopy (STM) systems, and their applications to chemical and biological systems.

Anastasia Gkika
Project manager
IRES - Innovation in Research and Engineering Solutions
Belgium

Anastasia Gkika holds a Diploma in Chemical Engineering and an MSc in Computational Engineering. Her academic and research background focus mainly on electrochemistry, polymer materials, composite manufacturing and life cycle assessment/life cycle costing. She is working as a H2020 project manager at IRES from 2019.

Sandy Bei
Data Scientist
IRES - Innovation in Research and Engineering Solutions
Belgium

Sandy Bei holds a BSc in Mathematics from the National and Kapodistrian University of Athens. She has participated in an internship with main focus the research of multi-scale curvature of stochastic surfaces. Currently, she is further expanding her knowledge in Data Analysis.

Dr Jelena Aleksic (OYSTER Partner & Organiser)
Senior Innovation Manager
Cambridge Nanomaterials Technology Ltd.
14 Orchard Way, Cambourne
Cambridge CB23 5BN
UK

Dr Jelena Aleksic is a Senior Innovation Manager at CNT Ltd. She has wide project management, R&D and teaching experience. While she was working as a scientific associate at the University of Applied Sciences in Stralsund, Germany she taught subjects Fluid Mechanics, Gas Dynamics and Mathematics. During her PhD studies in fluid mechanics related to crystal growth at the University of Rostock, Germany, she developed a new temperature measurement method for fluids based on thermochromic liquid crystals (TLC). Her thesis was awarded with the first prize at the South-eastern Conference on Theoretical and Applied Mechanics in Orlando, FL, USA. She organised scientific conferences and edited an internationally published science magazine. At the CNT Ltd. she has been working extensively on developing business strategies, and preparation of customised patent landscaping and market research reports in the field of nanomaterials. Dr Aleksic has also been working

on management of European collaborative R&D projects (EC FP7 & H2020) involving tasks such as innovation management, Business Model and Plan development, identification and analysis of Key Exploitable Results, mapping and engagement with stakeholders and other relevant exploitation and dissemination tasks. Previously she worked in many different industries including renewable energies, construction and social media and she is fluent in English, German, Spanish and Serbo-Croatian.

Dr Ana Bankovic Cassidy (OYSTER Partner & Organiser)
Senior Innovation Consultant.
Cambridge Nanomaterials Technology Ltd.
14 Orchard Way, Cambourne
Cambridge CB23 5BN
UK

Dr Ana Bankovic Cassidy is an Senior Innovation Consultant. She joined CNT team in February 2021.

Ana graduated from the Faculty of Physics, University of Belgrade Serbia, winning the award for the best BSc (Honors) Thesis of the year 2007. The main aim of her PhD study and further research was to identify and explain specific kinetic phenomena that occur in positron transport in electric and magnetic field due to non-conservative nature of positronium formation. Ana applied the basic phenomenology of charged particle swarms to study the interaction of positrons with biologically relevant molecules, in order to develop and establish a benchmark for Monte Carlo codes used in positron emission tomography (PET) modelling. Her research activities were undertaken in Centre for Non-Equilibrium Processes at the Institute of Physics in Belgrade, Serbia, a large interdisciplinary group with interests ranging from theoretical, numerical and experimental studies of low temperature plasmas, to studies of positron swarms and their applications, modelling particle detectors and conducting experiments at applying plasma physics methodologies to medicine and biological applications.

As a Visiting Researcher at the Open University, Milton Keynes in 2014/15, she worked on quantum chemistry treatment of positron interactions with atoms and molecules using the UKRmol quantum chemistry software.

Dr Karen Brace (OYSTER Partner & Organiser)
Innovation Consultant
Cambridge Nanomaterials Technology Ltd.
14 Orchard Way, Cambourne
Cambridge CB23 5BN
UK

Dr Karen Brace joined CNT as an Innovation Consultant in February 2022. Karen graduated from Imperial College with a BSc. in Chemistry (First Class with Honours). As part of her degree, she completed a 1-year ERASMUS research project at Ecole Supérieure de Physique et Chimie Industrielle in Paris. She has a PhD in electrochemistry from the University of Southampton. Her dissertation focused on bio-membrane electrodes for the electrochemical detection of phospholipase enzymes. Following her PhD, she spent 2 years in Kenya as a high school science teacher for Voluntary Services Overseas. On returning to the UK, she took up postdoctoral positions at the University of Southampton in both combinatorial electrocatalysis discovery for fuel cells in collaboration with Johnson Matthey and in liquid crystal templated nanostructures for supercapacitor, battery and solar cell applications. She joined Ilika in 2004 as a senior scientist working on high throughput catalyst deposition and screening for fuel cell applications for both commercial and EU funded projects. She worked at C-Tech Innovation Ltd as a project manager on numerous UK and EU funded projects in energy and renewables including fuels cells, electric vehicle batteries, redox flow batteries, ionic liquids and metal finishing. Project included both lab and pilot scale processes. Karen has also worked as an independent electrochemistry consultant primarily in the field of batteries and fuel cells.

Camilla Tacconis (OYSTER Partner & Organiser)
Associate Innovation Consultant
Cambridge Nanomaterials Technology Ltd.
14 Orchard Way, Cambourne
Cambridge CB23 5BN
UK

Camilla Tacconis completed her bachelor's degree in Physics at University College London (UCL) and proceeded to take the MASt in Physics at Cambridge University where she specialised in Solid State and Condensed Matter Physics. She has now continued her studies at the University of Cambridge and is undertaking a PhD in Functional Energy Materials in the Dutton Group. Her research focus is on polyanion cathode materials for rechargeable magnesium-ion batteries. She joined Cambridge Nanomaterials Technologies Ltd. (CNT) as an Associate Innovation Consultant in March 2022 to take part in the innovative projects that CNT manages and develops.

Mónica Spreadbury (OYSTER Partner & Organiser)
Senior Administrative Officer
Cambridge Nanomaterials Technology Ltd.
14 Orchard Way, Cambourne
Cambridge CB23 5BN
UK

Mónica Spreadbury is a bilingual (Spanish and English) Senior Administrative Officer at the CNT Ltd with large experience gained within a variety of organisations in the private and public sector, both internationally and in the UK. In CNT Ltd. she has been working for NCEM and AMAM private consortiums, UK funded Projects and EC projects preparing Open Day Workshops, meeting agenda, coordinating administrative activities, communicating with project partners and meeting guests and speakers, facilitating and supervising exhibition stands and taking care of the registration desk. Before joining CNT Ltd she worked as a Regional Service Assistant/Officer for the British Council in Cambridge and for the BirdLife International, as Office Manager in the Americas Division (Ecuador) and as a regional co-ordinator of the World Bird Festival (UK).

OYSTER Project Open Day 2022 - Partners organisations

University of Roma Tre (Project Coordinator)

Web: https://stm.uniroma3.it/

The Università degli Studi "Roma Tre" (**Roma Tre University**) has been established in 1991 and actually represents a central point of reference in the academic scenario at both local and national level hosting nearly 40000 students. The University has 12 Departments, 10 Libraries and 10 Centres and totals of about 970 teachers (553 professors I and II level, 353 research assistant professors and 36 language experts). Since its foundation, Roma Tre has paid a great importance to international cooperation, and it has been an active participant in the European Union exchange programs. Particularly, Roma Tre has taken part to the Erasmus program since 1993/1994. In the academic year 2002/2003, Roma Tre was awarded the Erasmus University Charter (EUC), thus obtaining the right to participate in the Erasmus Program. Roma Tre is involved, either as coordinator or partner, in about 78 International Research projects.In Oyster, the activity of UNIROMA3 team will be conducted by the Materials Science and Technology (STM) group, which is part of the Engineering department. The STM group has a consolidated experience in the field of advanced characterization of bulk materials and thin films, through the use of high-resolution microscopy, (TEM, FIB/SEM and AFM), nanoindentation (four different heads available, including the novel high-speed heads), nano-scratch testing and micro-tribological. The group is composed by four staff units (one full professor, two assistant professors and one senior technician) and a team, financed mainly through research projects, composed of about 6

unities with the following profiles: two fellowship researchers, three doctoral students and one person with technical-administrative role. The research group is deeply involved in the activities of the European Materials Characterisation Council (EMCC), and has already successfully completed a large European project as a coordinator (www.istress.eu).

National Technical University of Athens - - R-NanoLab

Web: nanolab.chemeng.ntua.gr

The "**Research Unit of Advanced, Composite, Nano Materials & Nanotechnology", R-NanoLab** is situated at the School of Chemical Engineering (Department of Materials Science and Engineering) of **National Technical University of Athens** (NTUA). It is established since 2006; its research group has extensive experience in Design, Production and Characterization of Advanced-, Composite- and Nano-Materials. R-NanoLab has a strong presence in European Research Activities in Materials Science, through participation in numerous EU and national funded projects. As part of the European Technological Community, R-NanoLab is an active member of several Clusters: European Materials Characterisation Council (EMCC), European Pilot Production Network (EPPN), European NanoSafety Cluster (NSC) taking part in establishment of new standard methodologies, provide suitable background for regulation and nanosafety, and support EC policy development.

Thales Group

Web: www.thalesgroup.com

Thales is a world leader for mission critical information systems, with activities in 3 core businesses: aerospace (with all major aircraft manufacturers as customers), defence, and security (including ground transportation solutions). It employs 68000 people worldwide (50 countries). It provides its customers with all the key functions in the critical information loop, from detection and processing to transmission and distribution. **Thales Research & Technology (TRT)** comprises five research entities in France, the UK, the Netherlands, Canada and Singapore, as well as laboratories managed jointly by corporate research and Group subsidiaries and a network of research departments in operating units. TRT research comes under three main headings: Hardware systems and components research is mainly conducted by TRT France; Software technology research; Software system research. **Thales Research and Technology - France (TRT-Fr)** located near Paris, is the main multidisciplinary research unit of the Thales group. Through its internal activities and scientific links with industries and universities, either in France or internationally, TRT-Fr is participating in the preparation of Thales industrial future in strategic R&D fields. In addition to R&D activities, TRT-Fr also provides scientific and technical advice, expertise or services for the company.

National Physical Laboratory

Web: www.npl.co.uk

The National Physical Laboratory (NPL) is the UK's National Measurement Institute, providing the measurement capability that underpins the UK's prosperity and quality of life. From new antibiotics to tackle resistance and more effective cancer treatments, to unhackable quantum communications and superfast 5G, technological advances must be built on a foundation of reliable measurement to succeed. Building on over a century's worth of expertise, our science, engineering and technology provides this foundation and helps to make the impossible possible. We save lives, protect the environment and enable citizens to feel safe and secure, as well as support international trade and commercial innovation. As a national laboratory, our advice is always impartial and independent, meaning consumers, investors, policymakers and entrepreneurs can always rely on the work we do.
Based in Teddington, south-west London, NPL employs over 500 scientists and is home to 388 of the world's most extensive and sophisticated laboratories. NPL also has regional bases across the UK,

including at the University of Surrey, the University of Strathclyde, the University of Cambridge and the University of Huddersfield's 3M Buckley Innovation Centre.

Cambridge Nanomaterials Technology Ltd

Web: www.cnt-ltd.co.uk

Cambridge Nanomaterials Technology (CNT) Ltd is an innovation management and nanotechnology consulting company based in Cambridge, UK. It is closely linked with a sister company in Brussels, CNT Innovation (www.cnt-innovation.be). The CNT Ltd helps companies, academic and government institutions to develop world-class innovative solutions for nanomaterials related R&D and IPR strategy, partnership, products, technologies, funding and markets. CNT Ltd is specialised in carbon nanomaterials R&D consulting and collaborative R&D project management, including exploitation and dissemination management, consortium and supply chain building. CNT has done a number of patent landscaping and market research analysis studies regarding production and use of various nanomaterials helping to link inventors and technology developers with end-users and investors. The CNT Ltd is a leader of two private membership based consortiums: Nano-Carbon Enhanced Materials (NCEM) and the new Advanced Materials for Additive Manufacturing (AMAM) with members coming from leading multinational companies and research institutions.

IRES

Web: innovation-res.eu

IRES, an R&D consulting company founded in 2015, is dedicated to new and innovative nanotechnology solutions. Headquartered in Brussels (Belgium), IRES is a team of key collaborators that provide supporting services such as IP, market research, environmental solutions and marketing advice. Our mission is to deliver to our customers world-class innovative solutions for development of materials based products. Customised and tailored solutions on demand, often in tool form, successfully identify possible business risks and provide sustainable directions. For this, the whole lifecycle of products is considered, through a holistic evaluation of social, environmental and economic aspects based on EU standards and regulations. IRES in collaboration with external bodies and related initiatives, is part of new technological events, arising innovative technologies and strategic research trends.

Fraunhofer IWM

Web: www.fraunhofer.de/en.html
www.iwm.fraunhofer.de

Fraunhofer is Europe's largest application-oriented research organization. It comprises 66 institutes at 43 different locations within Germany as well as remote research centres and representative offices in Europe, USA and Asia. The **FRAUNHOFER Institute for Mechanics of Materials (Fraunhofer**), Freiburg is a leading research centre in the experimental and theoretical characterization of material properties. The institute combines know-how and experience in all fields of materials technology and materials science. Within the scope of Materials Design, Manufacturing Processes, Tribology, Component Safety and Lightweight Construction and Assessment of Materials, Lifetime Concepts we offer clients and project partners individual solutions, unexpected insights and immediately actionable results for the development, production and application of functional materials, high-performance components and resource efficient manufacturing processes.

Molecular Plasma Group (FUNCOATS)

Web: www.funcoats.com
www.molecularplasmagroup.com

FUNCOATS which belongs to MPG (Molecular Plasma Group) develops atmospheric plasma treatments, enables dedicated chemical functionalization of any substrate (plastics, glass, metal, composites, textile, etc.). Almost any chemical precursors can be grafted/coated onto a substrate in order to create a desired surface function. Funcoats finally provides industries with nanocoatings production methods to achieve surface functionalizations such as, superhydrophobic and oleophobic properties, adhesion enhancements, or bioactivities properties. FUNCOATS develops and distributes adapted solutions to various industrial specific requirements regarding surfaces modification and functionalization to control surfaces properties of a wide range of substrates (polymers, metals, ceramics, composites, textile, etc...). For example, our eco-friendly superhydrophobic nano-coating (LEAF TECHNOLOGY□) can be used for answering to various properties on 2D and 3D parts such as, anti-wetting, self-cleaning, anticorrosion, anti-condensation and anti-icing, antibacterial, anti-biofouling, etc. FUNCOATS succeeds in providing a durable and versatile superhydrophobic solution suitable with the most extreme conditions encountered in Building or Transport activities such as Aerospace, Automotive, Rail- ways, and Navy applications.

Goldbeck Consultancy Ltd

Web: materialsmodelling.com

Goldbeck Consultancy supports a wide range of aspects in the science to engineering, academia to industry spectrum of materials modelling: Multiscale materials modelling integration across science and engineering; Translation, guidance and coaching for using materials modelling in R&D projects; Economic impact analysis; Training; Product management, marketing and business development for science and engineering software; Software commercialisation strategies and planning: from academia to business; EU project proposal writing, team building, project management and monitoring.

NANOforce

Web: www.nanoforce.co.uk

Nanoforce Technology Limited was established in 2005, it is an open-door industry-facing research and development company committed to delivering state of the art material solutions based on advanced processing technologies. Nanoforce aims to enhance the quality and performance of customers' products by providing technical solutions in competitive timescales. It is driving innovation in the advanced materials sector through continuous development of industry-leading expertise, high value added products and integrated services. Nanoforce consists of a team of experienced professionals specialising in high performance ceramics, advanced polymer composites, process modelling and materials characterisation. Each customer's particular application is supported by our well-equipped facilities and we provide unique solutions for a wide range of topics.

Nanosurf

Web: www.nanosurf.com/en

Founded in 1997, we are a Swiss based high-tech company providing scanning probe microscopes to customers around the globe. Our product range starts with very compact AFM and STM instruments, followed by state-of-the-art research atomic force microscope systems, all the way up to fully customized and comprehensive next-level solutions. Our customers in research, industry and teaching value the innovative approach, modularity, and ease of use of our products.

The Politecnico di Torino

Web: www.polito.it/small

The Politecnico di Torino was founded in 1859 as “Scuola di Applicazione per gli Ingegneri” (Technical School for Engineers), and it became Regio Politecnico di Torino in 1906. A long history, which bore out the University as a reference point for education and research in Italy and in Europe, a Research University of international level which attracts students from more than 100 countries and which activates about 800 collaborations per year with industries, public institutions and local organizations.
The multi-Scale ModeLing Laboratory - SMaLL - is an engineering research group launched at Politecnico di Torino with the aim to propose and promote innovative solutions for applications related to the energy sector. It has been active for many years in modelling on various scales the thermal and transport properties of materials and composites, including those containing carbon nanomaterials. Moreover SMaLL has a relevant expertise regarding to the modelling interaction forces at nanoscale interfaces, even in the presence of water and adsorbed soft matter.

Spectrum Instruments

Web: www.spectrum-instr.com

Spectrum Instruments Limited (SIL) is an SME based in Limerick, Ireland and is a leading worldwide provider of Scanning Probe Microscopes and Accessories. SIL is involved in the development and production of traditional Atomic Force Microscopes (AFM’s); AFM’s combined with inverted microscopes; AFM combined with spectrometer; scanning near-field optical microscope and AFM in vacuum. SIL provides a versatile range of sample testing, consultations and demonstrations. SIL staff consists of employees with backgrounds in scientific and industrial product design and the companies activities include service & logistics, sales & marketing, product development, production assembly and testing on site. SIL is the exclusive worldwide distributor of NT-MDT products & accessories and is licensed to design, manufacture and distribute all NT-MDT equipment and services.

University of Limerick

Web: www.ul.ie

The University of Limerick (UL) is an, internationally focussed University with over 13,000 students and 1,300 faculty and staff. It is a young, energetic and enterprising institution with a proud record of innovation in education and excellence in research and scholarship. As a research-led university, UL’s mission is to remain distinctive through the deliberate focus on research with impact, graduate employability, industry engagement and the provision of an outstanding campus environment.
The Bernal Institute at UL comprises over 300 researchers active in materials science and technology with relevant process and manufacturing engineering. Materials research is challenge-driven; whether addressing health (biomedical, pharmaceutical and nutritional); energy (electric and composites), transport (composites and fuels), or information (electronic), the combination of fundamental Materials Science and Technology knowledge alongside sustainable process engineering experience provides an unique eco-system for researchers at the Bernal Institute to generate research with impact to meet these challenges with and for society.

OYSTER Project Open Day 2022 – Guest Organisations

Ansys UK

Web: www.ansys.com

Ansys Inc. Materials Business Unit has a core business for design and development of software products related to materials information management (Granta MI), data, and tools (sustainability, eco-design, restricted substances, critical materials assessment, materials selection and substitution), several of which integrate with CAD/CAE/PLM. Ansys contributes to networks and standardization bodies and supports a number of industry standard commercial databases for materials such as metals,

composites, polymers, and medical devices. Ansys also produces and maintains several leading data products including Materials Universe (a database of over 4,000 commercially available engineering materials including technical, ecological and cost attributes for each material and its associated processes) and the Product Risk database which incorporates one of the leading resources on restricted substances as well as critical and conflict minerals risks and data needed for streamlined life cycle analysis. Ansys supports numerous collaborative projects by providing a centralized materials information management system for the project to enable the pooling and consolidation of project knowledge which would otherwise be dispersed amongst the partners, this approach enables standardization and capitalizes on the value in the project by avoiding duplication of effort and maximizing results visibility to partners and external stakeholders. Ansys also has reach to over 1000 educational institutes world-wide via its education software, Granta EduPack, which translates materials research into data, information and teaching resources. As part of the wider Ansys Inc. organization for engineering/scientific modelling and simulation software tools, project results and learning resources can reach an even greater audience for higher impact of collaborative project outcomes.

Fundación TEKNIKER

Web: www.tekniker.es/en

TEKNIKER is a technological centre legally constituted in 1981 as a private not-for-profit foundation focused on enhancing the innovative capabilities of their customers and furthering their technological capital to be more competitive, although in a sustainable manner, by producing and applying scientific & technical knowledge. It employs 284 researchers and has a turnover of over 26.2 M€.

Besides, Tekniker is part of the Basque Research and Technology Alliance (BRTA) that comprises 16 technology centres and cooperative research centres belonging to the Basque Network of Science. The BRTA provides 1300 scientific publications and 100 patents yearly, pointing out the great levels of technological-scientific excellence.

In line with its missions and origins, TEKNIKER not only provides companies with technological support, but is also involved in generating new business initiatives, which are usually technological and often "spin offs" of the centre itself. Since the early nineties, TEKNIKER has been involved in setting up around twenty new business initiatives to a greater or lesser extent. Most of these initiatives were in the industrial sector.

TEKNIKER is specialized in mechatronic systems, industrial maintenance, automatization and industrial robotics, inspection and measuring, surface engineering, sensors devices and innovation and competitive intelligence. TEKNIKER brings together its skills and technologies and focused them on the market, applying them to diverse and key industrial sectors such as aeronautics and space, automobile sector, biomedicine, renewable energy, research infrastructures, machine tools and manufacturing, E-Health and social Technology. TEKNIKER has a broad experience in large funded projects. It has participated in more than 240 European projects since FP2 coordinating 25% of them.

https://issuu.com/ik4-tekniker/docs/ik4-tekniker_catalogo_en

Centro Ricerche FIAT S.C.p.A.

Web**:** www.crf.it

Centro Ricerche FIAT (CRF) is an industrial organization having the mission to promote, develop and transfer innovation for providing competitiveness to the Stellantis Group. With a full-time workforce of more than 600 highly trained professionals, CRF fulfills its task by focusing on the development of innovative products & materials, implementation of innovative processes, development of new methodologies and training of human resources. To properly cover a very wide technological spectrum, CRF developed a global network with national and international institutes, private and public research organizations, universities and companies, through the promotion of common research activities, associations, conferences and seminars and researchers' mobility. This network further strengthens

the center's global innovation strategies, the implementation of specific activities locally, creation of expertise and continuous monitoring to enhance competitiveness and further development in areas such as transportation vehicles and components, innovative materials and application technologies, as well as the work on innovative alternative propulsion systems and transmissions. CRF is organized in four technical divisions: Process Research, Vehicle and Body, Powertrain and Materials Engineering Methods and Tools. The division Materials Engineering Methods and Tools guarantees to Stellantis the knowledge and applications of the materials from innovation to ensuring the quality of the materials in all phases of product development.

Università degli Studi di Torino

Web: www.unito.it

The **University of Turin** is one of the most ancient and prestigious Italian Universities.
Hosting over 79.000 students and with 120 buildings in different areas in Turin and in key places in Piedmont, the University of Turin can be considered as "city-within-a-city", promoting culture and producing research, innovation, training and employment.
The University of Turin is today one of the largest Italian Universities, open to international research and training. It carries out scientific research and organizes courses in all disciplines, except for Engineering and Architecture. It is an integral part of the community, acting for reviving urban and suburban areas, promoting cultural interaction, social integration and development, encouraging dialogue and insight into current realities.

Advanced Material Simulation S.L.

Web: http://amsimulation.com/en/

ADVANCED MATERIAL SIMULATION (AMS) is a high-tech SME company focused on numerical simulations, Multiphysics and multiscale materials modelling and Artificial Intelligence applications in Material Science. AMS is formed by a multidisciplinary team of doctors in Chemistry and civil and materials engineering with a huge experience on Material Science, Solid Mechanics, Structural Integrity, Fracture Mechanics, Mathematics, Machine Learning and Deep Learning. AMS is specialized in material characterization by inverse analysis combining experiments, modelling and Artificial Intelligence. The company provides specialized services in engineering, R&D, consulting and training.

Evonik Operations GmbH

Web: https://corporate.evonik.de/en
www.silica-specialist.com/en

Evonik is one of the world's leading silica producers. We are the only company to provide both precipitated and fumed silica and metal oxides from a single source – and in consistently high quality. Our network of regional laboratories on four continents puts us close to you, so we can provide tailored silica for your product. Benefit from our expertise, our innovation and the diversity of our silica.

Keysight Technologies GmbH

Web: www.keysight.com

Keysight Technologies (Keysight) is one of the world's premier electronic measurement companies with 14.000+ employees (spin-off from Agilent Technologies in 2014) and was added in 2018 to the famous USA S&P500 stock index. Keysight offers a portfolio of different electronic measurement equipment, calibration devices, software packages, and data analytics, including high speed oscilloscopes and performance network analysers that are in many aspects leading the edge on performance, speed, and sensitivity in the broad frequency spectrum. Recently, Keysight extended the

automotive and battery division by adding automotive battery test systems on top of power supplies and source measurement units. Also, it provides GHz measurement technology including 3D electromagnetic modelling suites EMPro and electrical/thermal modelling ADS. Keysight Technologies GmbH Austria has one of the leading industrial research labs on the microwave GHz measurement including high frequency PNA technology, GHz calibration algorithms, and tomographic imaging reconstruction. Several Keysight scientists work in this lab on technology with a strong footprint in basic science, as shown by 100+ peer reviewed publications in the last 10 years.

ICP-CSIC

Web: www.csic.es

The **Spanish National Research Council (CSIC)** is the largest public research institution in Spain and one of the most renowned institutions in the European Research Area (ERA). It is affiliated to the Ministry of Science and Innovation through the Secretary General for Research.

European Synchrotron Radiation Facility (ESRF)

Web: www.esrf.eu

The **ESRF** is the most intense and brilliant hard X-ray sources existing today worldwide. An extremely bright source that produces X-rays 10 trillion times brighter than the X-rays used in hospitals or laboratories. Using these X-rays, the ESRF functions like a “super-microscope”, which "films" the position and motion of atoms in condensed and living matter, and reveals the structure of matter in all its complexity.

ELODIZ

Web: www.elodiz.com

ELODIZ Ltd was founded by Dr Enrique Lozano Diz and has been supporting the development of Raman Spectroscopy since 2012.
Enrique holds a PhD in Chemistry and has over 15 years of experience working with laser-based instrumentation, its development and commercialisation. Since launch our company has progressively evolved to adapt to demands in the market and to stay relevant, innovative and competitive. We have expanded our business offering from knowledge solutions and distribution to a specialised line of products developed and manufactured in-house, reference materials, fibre coupled LED light sources and many other optoelectronics tools for spectroscopy users.

Materia Nova R&D Center

Web: www.materianova.be/en/

Materia Nova R&D Center is a private RTO located in Mons, Belgian, employing ca. 80 persons since 2000 and which activities are devoted to research and technology in materials. The mission of Materia Nova is to foster innovation in materials and support valorisation of scientific excellence in industrial and societal environments. Its expertise encompasses synthesis and fabrication of multi sourced polymers and composites, thin film deposition process for smart coatings and devices, energy production and management, and a characterisation platform.

Institut Laue-Langevin

Web: www.ill.eu/about-the-ill

The **Institut Laue-Langevin** is an international research centre at the leading edge of neutron science and technology. As the world's flagship centre for neutron science, the ILL provides scientists with a very high flux of neutrons feeding some 40 state-of-the-art instruments, which are constantly being developed and upgraded.

As a service institute the ILL makes its facilities and expertise available to visiting scientists. Research focuses primarily on fundamental science in a variety of fields: condensed matter physics, chemistry, biology, nuclear physics and materials science, etc. Whilst some are working on battery design, fuels and catalysts, plastics and pharmaceuticals, others are looking at biological processes at cellular and molecular level. Still others may be elucidating the physics that could contribute to the electronic devices of the future.

The ILL also collaborates closely and at different levels of confidentiality with the R&D departments of industrial enterprises.

ILL is funded and managed by France, Germany and the United Kingdom, in partnership with 11 other countries.

Aristotle University of Thessaloniki-LTFN

Web: www.ltfn.gr

The Aristotle University of Thessaloniki is the largest university in Greece. The main campus is located in the centre of the city of Thessaloniki, and covers an area of about 33.4 hectares. It comprises 10 faculties which consist of 40 schools and 1 single-School Faculty.

Some educational and administrative facilities are located off campus for practical and operational reasons. A number of these facilities are located outside the city of Thessaloniki or even in other cities.

Institute of Nanotechnology, Karlsruhe Institute of Technology

Web: www.nanomat.de

The Research University in the Helmholtz Association.

It is th**e KIT's** objective to make significant contributions to the global challenges in the fields of energy, mobility, and information. More than 9,000 employees cooperate in a broad range of disciplines in natural sciences, engineering sciences, economics, and the humanities and social sciences. Innovation efforts at KIT build a bridge between important scientific findings and their application for the benefit of society, economic prosperity, and the preservation of our natural basis of life. KIT is one of the German universities of excellence.

Montanuniversität Leoben - MUL

Web: www.unileoben.ac.at/en/

The **Montanuniversität Leoben (MUL**) is a technical public university established in 1840 with a focus on teaching and application-oriented research in a variety of disciplines incl. energy technology, safety

engineering, materials and natural sciences, business and economics. Its interdisciplinary environment and close collaboration between departments and industry allow to establish sustainability within the value-added cycle, from raw materials to the finished product, on to the disposal of the product and its recycling and reuse as a secondary raw material. A total number of students ~3800 allows them to be integrated in the research from early stages of their study. The MUL with its 950 researches and lecturers (out of 1300 employees) is internationally recognized as an excellent research university focused on innovation and novelty in materials and products for challenging applications.

Department of Materials Science (DMS) of the M**UL** is a world-wide recognized scientific institution in the field of synthesis and characterization of advanced functional nanostructured materials with more than 25 years of experience in the field and 150+ researchers (including technicians and administration staff). At the DMS, 100+ projects were funded within the last 5 years including Christian Doppler Laboratories, EU FP7 projects and national grants. Additionally, several Horizon 2020 projects including ERC starting, consolidator and advanced grants are running at the DMS. DMS provides with a high-level infrastructure for characterization of structurally complex nanostructured materials including facilities for material synthesis. The unique combination of advanced synthesis and characterization methods in one place allows for development of nanostructured thin films with highly defined microstructure and properties, which are based on established fundamental processing-structure-property relations and thus suitable as reference samples for a variety of applications.

Politecnico di Milano

Web: www.polimi.it/en

Politecnico di Milano is a public scientific-technological university which trains engineers, architects and industrial designers.

The University has always focused on the quality and innovation of its teaching and research, developing a fruitful relationship with business and productive world by means of experimental research and technological transfer.

Research has always been linked to didactics and it is a priority commitment which has allowed Politecnico Milano to achieve high quality results at an international level as to join the university to the business world. Research constitutes a parallel path to that formed by cooperation and alliances with the industrial system.

FundacióEurecat

Web: https://eurecat.org/en/

Eurecat is the second largest private research organization in Southern Europe managing a turnover of 50M€ and 650 professionals and being involved in more than 200 R&D projects and has a customer portfolio of over 1.700 business clients. Technology transfer is also an essential activity in EURECAT, with more than 153 patents and 8 technology-based companies (eight in Spain and one in Latin America) started-up from the center.

Its R&D, innovation and training activities span from Industrial Technologies (metallic, plastic and composite materials, manufacturing processes, autonomous and professional robotics, functional printing and fabrics, simulations, sustainability and Chemistry) to Digital Technologies (Digital Humanities, Big Data Analytics, IT Security and Applied Artificial Intelligence, digital health, data mining and multimedia technologies) Sustainability (Water, Air, Soil, Waste, Energy, Batteries and Environmental Impact) and Biotech (Omic science and Nutrition & health). Additionally, EURECAT has been accepted by the European Commission as a KETs (Key Enabling Technologies) Technology Center in order to collaborate with SMEs on close-to-market research and innovation activities.

QWED Sp.z o.o.

Web: www.qwed.eu

QWED is a dynamic hi-tech company, set up in 1997 and based in Warsaw, Poland. Being a happy blend of academic researchers, microwave engineers and computer experts, we develop and produce electromagnetic simulators of supreme accuracy, tailor-made to users' needs in a friendly format, several types of resonators for precise measurements of electromagnetic properties of materials at microwave frequencies and Microwave Frequency Q-Meter - an inexpensive computer controlled microwave oscillator system that enables quick and automatic measurements with a dedicated resonators. Currently QWED employs 10 people and cooperates with 6 consultants. Clients in 33 countries on six continents have applauded consistent high quality of QWED's products and services.

BASF

Web: www.basf.com

BASF is one of the major chemical companies. The materials produced by BASF are used in almost all industry segments. BASF is the biggest polymer material and chemicals provider to the automotive industry. Other relevant segments are electronic materials (e.g. for semiconductors, display, etc.) ´, aerospace, packaging, construction etc.. BASF is besides a leading cathode active material supplier to battery producers for electrified vehicles around the world.

Fraunhofer IFAM

Web: www.ifam.fraunhofer.de/en.htm

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The **Fraunhofer IFAM** is one of the most important research institutions in Europe for adhesive bonding technology, surfaces, shaping and functional materials. We put our central principles into practice: scientific excellence, a focus on the application of technology, measurable utility for customers and ensuring the highest quality. Our round about 700 employees, working in 20 departments and numerous working groups combine their broad technological and scientific knowledge and expertise into core competencies: Metallic Materials; Polymeric Materials; Surface Technology; Adhesive Bonding Technology; Shaping and Functionalization; Electromobility; and Automatization and Digitalization.

UNILEVER

Web: www.unilever.com

UNILEVER was established over 100 years ago, we are one of the world’s largest consumer goods companies. We are known for our great brands, a global footprint and our belief in doing business the right way.

TEMAS Solutions GmbH

Web: www.temasol.ch

The Chemicals Strategy for Sustainability was launched by the European Commission in 2020, it lies at the core of the European Green Deal and represents a new growth strategy for European industry. This new strategy focuses on greener chemicals, safety, sustainability, and circularity and sets the ambitious goal for Europe to become sustainable and climate neutral by 2050. TEMAS Solutions staff has been trained for the past several years on the main topics required by the Chemicals Strategy for Sustainability and currently assists companies to achieve this transition which moves Europe towards the Green Deal. We provide expertise in sustainability assessment, safe-and-sustainable-by-design, safety and regulatory aspects (REACH, medical devices, cosmetics), regulatory support for nanotechnology products, and risk assessment and biological evaluation reports, IT quality assurance, process design and data management. We also provide training in our fields of expertise.

IMDEA Materials Institute

Web: https://materials.imdea.org/

The **IMDEA Materials Institute,** one of the seven Madrid Institutes for Advanced Studies (IMDEA), is a public research centre founded in 2007 by Madrid's regional government. The goal of the Institute is to do research at the forefront of Material Science and Engineering, attracting talent from all around the globe, and collaborating with companies in an effort to transfer fundamental and applied knowledge into valuable technology. The Institute is organised into sixteen research groups, each of them participating in one or more broad research programmes. Being a medium size centre, researchers are encouraged to collaborate with other top research groups, leading to an open, collaborative environment, also drawing international scholars.As a result of its growth, over 150 people do research at the Institute, including more than 45 post-doctoral scientists and 60 pre-doctoral students. The state-of-the-art experimental and computational facilities enable the groups to do research at the forefront of Material Science and Engineering, currently publishing above 120 JCR journal articles per year.

NanoLockin

Web: www.nanolockin.com

NanoLockin is an early-stage start-up company developing instruments for the detection and analysis of nanomaterials. The company is selling instruments based on active thermography for a reliable and reproducible analysis of nanoparticle systems. From the recorded heat signature dispersed carbon particles can be quantified or thin film thickness can be analysed. Further the distribution of particles in films can be analysed or the reproducibility of the particle synthesis can be verified.

Cristal innov

Web: www.cristal-innov.com/en/

Cristal Innov's platform activity is positioned as a facilitator and accelerator of technology innovation in the sector of crystals and processes.

Bridging the gap between technologies from laboratories and the innovation potential of companies requires a set of services benefiting from a state-of-the-art technological environment. In addition to premises and equipment, Cristal Innov also provides the animation of the crystal industry and supports the setting up of collaborative projects.