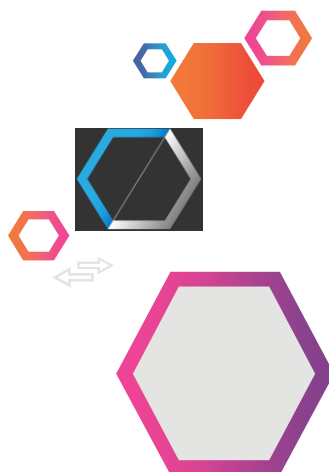




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MODCOMP

*“MODIFIED COST EFFECTIVE FIBRE BASED
STRUCTURES WITH IMPROVED MULTI-
FUNCTIONALITY AND PERFORMANCE”*



NEXT GENERATION OF CARBON FIBRE BASED MATERIALS



This project has received funding from the European Union's Horizon 2020 research and innovation programme, European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme, Industrial Technologies, Advanced Materials and Nanotechnologies, H2020-NMP-2014-2015/H2020-NMP-2015, under grant agreement No. 685844.



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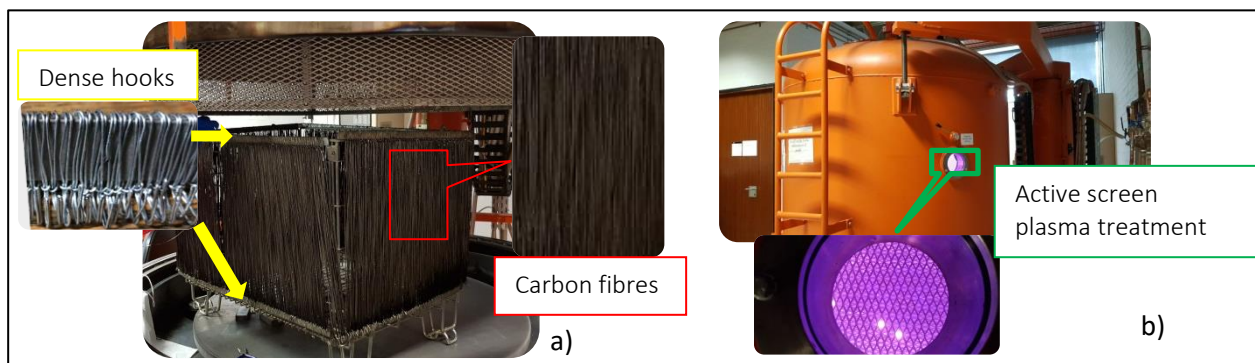
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Recent Research Achievements

Up-scaling active screen plasma (ASP) treatments on CFs

After an all-inclusive characterisation on the ASP treated CF materials in terms of SEM observation, XRD characterisation, Raman spectrum analysis, wettability and its durability tests and single fibre tensile tests with Weibull data analysis, optimal treatment conditions have been designated. In order to fulfil the industry demonstration, a shell-type component, 10,000 meters

long carbon fibres of HTA40 were needed to be optimally ASP treated. The challenges of this up-scaling treatment was conquered via selecting a suitable metal frame, designing/fitting dense hooks on the top and bottom lines of the frame and then mounting CFs on the frame to have about 650 meters for one batch treatment (see Figures below and a [video clip](#) for details).



When the treatment finished, CFs were unloaded from the frame and winded to the bobbins provided by partner YUZ. During the last two months, in total 10k meters of the CFs were treated and posted to YUZ and a shell-type demonstrator is expected to be made with the CFs sent. With such a frame, large areas of the CF fabrics (1.4 m^2) were also blanketed on it and ASP treated, which were sent to partner NCC for making composite and carrying out the characterisations.

For more information, you can contact Dr. Xiaoying Li, E-mail: x.li.1@bham.ac.uk





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Dimensional risk analysis

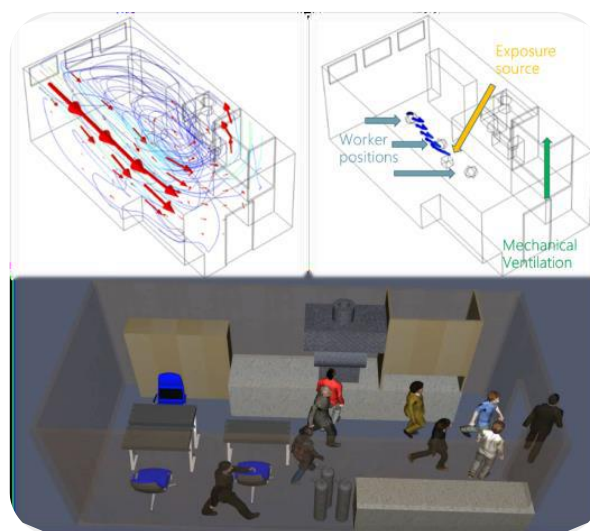
A continuously growing body of research work demonstrates that manufacture, handling, process and use of nanomaterials may present considerable hazards.

Therefore, the development of refined risk assessment strategies is crucial. IRES developed a control banding risk assessment tool organized in three connected but discretely studied parts (Hazard, Probability and Exposure Assessments).

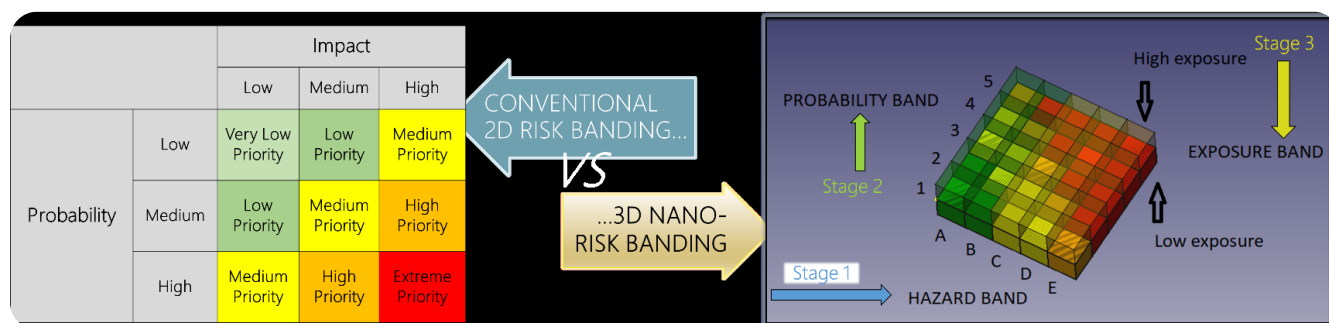
The tool analyses and assesses input information concerning nanomaterial characteristics, nanomaterial processes, and details about the workplace.



5 stage process



The individual study of exposure events fulfils the necessity of describing multiple exposure scenarios within nanomaterial processes, as well as estimating exposure characteristics for each scenario. This flexibility is not present in conventional, 2D (Impact x Probability) approaches.





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The present work Received the Best Poster Award NMBP at EuroNanoForum 2019 conference on June 12 - 14, 2019 with poster presentation title:

“Towards novel exposure and risk assessment techniques for nanomaterials”.

For more information, you can contact Dr. Elias Koumoulios, E-mail: epk@innovation-res.eu

Electropolymerisation of PMAA on continuous CF

One of the main objectives of the project is to produce CF-based structures with increased functionality (enhanced mechanical, electrical and thermal properties).

In this scope, the electrochemical treatment of NTUA is performed by electro-polymerizing methacrylic acid (MAA) solution on the CF (mainly CF fabrics), creating an interlayer that enhances the fibre-matrix interfacial adhesion.



Electrochemical treatment

The results of this treatment appeared really promising, leading to two publications on scientific journals and four presentations on international scientific conferences.

NTUA is now turning the attention on upscaling the process by creating a continuous line of electropolymerization.

The aim is to be able to treat carbon fiber spools in a continuous way and furthermore, to apply new technologies on this continuous sizing process via smart sensing that can warn for the life duration of the MAA solution. By this way, the quality of manufacturing operation will be optimised and the manufactured products will be of great value for the composites industry that lacks automation and standardisation.





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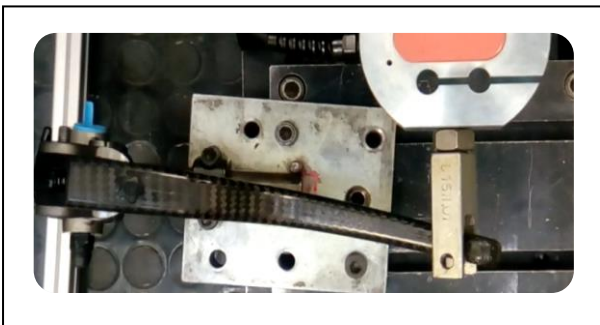
MODCOMP's Automotive Demonstrators: Handbrake lever and steering knuckle

Some adjustable handbrake levers for motorcycles made by composite material have been manufactured by SICOMP in the beginning of 2019. C-Weave 400 T 6K HS X 125CM (woven carbon fabric) with Bodopox AF-1200 (base resin) and Bodocure INF 32 medium (hardener) were used to produce the levers.



Breaks

Some tests were made in Brembo to evaluate the mechanical behaviour of these prototypes. Despite the first one hasn't shown resistance issues, the stiffness was a bit poor for a real application.



Tests of breaks

For this reason, a new prototype with a different shape was produced and tested. The last prototype that has solved the highlighted problem, was obtained modifying the machining area in order to keep more material (+5 g) on the lever. The difference between the two prototypes can be clearly seen in the first picture. The new composite lever allows a mass reduction of about 40% compared with the traditional one made by aluminium. The levers with CNTs are also ready for the tests that will be done before the end of the year.

The first steering knuckle for a car made by composite material have been manufactured by Yu-zhnoye SDO. G0926 (carbon fabric) with Araldite LY 556 (epoxy resin), Aradur 917 (hardener), DY 070 (accelerator) were used to produce the knuckle.

After a geometrical check of the prototype, Brembo is completing the design of the equipment needed to perform the tests on the knuckle.

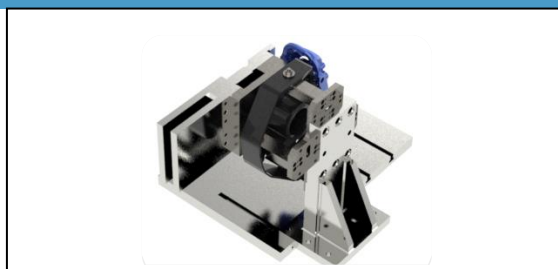




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Knuckles



Test on the knuckles

The manufacturing of the prototype with nano-diamonds in resin is ongoing. Tests on the knuckles made by the “reference” and “treated” materials will be concluded in the beginning of the next year.

For more information you can contact:
Mr. Giorgio Valota
E-mail: giorgio_valota@brembo.it
Phone: +39 035 605 2328.

MODCOMP's Large Scale Demonstrators: sailing boats, shelters and personal vehicle storage

Recent activity by MODCOMP partners AP&M and GSG has resulted in the completion of three quite diverse large-scale demonstrators; the ‘SleekFast’ sailing boat, the ‘AdShel’ shelter system and the ‘SecureShel’ personal vehicle storage.

Initially, each of these was designed and produced by the partners using traditional lay-up manufacturing technique with standard resins and glass fibre (GF) materials.

Several iterations were produced, introducing refinements to each of these ‘benchmark’ demonstrators so as to best realise the practical usability of the intended products.



SleekFast components



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SleekFast craft

Using the same manufacturing techniques and introducing the MODCOMP advanced materials to the process, the final demonstrators have now been produced to be employed as proof of concept for the scientific research and innovation work being undertaken by the project.

As product testing commences from this point, we will be able to report more results in our next project newsletter.

For more information, you can contact:

SleekFast sailing craft:

Mr. Guy Simmonds, AP&M, e-mail: simmonds.guy@gmail.com

AdShel and SecureShel:

Mr. Glen Monaghan, GSG, e-mail: info@global-safeguard.com



AdShel – exterior with door template

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AdShel - initial interior fit



SecureShel - development



SecureShel – nearing completion



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Participation in Conferences, Workshops and Events

MODCOMP project meeting, Torino, Italy

The 36M project meeting took place on the 5th and 6th of March 2019 in Torino, Italy.

The main focus was on the tasks and deliverables accomplished during the last months of the project.

The following topics were presented: Functionalization and surface modification of fibres, Production of high-performance fibre-based structures, Characterisation and testing of performance, Characterisation and testing of performance, Modelling, Life Cycle Analysis,

Nanosafety and Risk analysis, Scale up / Demonstration, Characterisation of demonstrators, Exploitation and Dissemination activities and Management of the project and all the obligations towards the European Commission.

Technical, modelling and demonstration progress assessment was also raised in front of the EC Monitor, Dr. Victoria Folea.

After the formal part of the meetings, there were also group and bilateral meetings between technical, modelling and demonstrator Work Package leaders.



MODCOMP project partners at the 36 Month Project Meeting in Torino, Italy



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VECMA All-Hands Meeting (AHM) 2019, Amsterdam, Netherlands

Mr. Matteo Fasano attended the first VECMA All-Hands Meeting (AHM) 2019, which took place at the University of Amsterdam on the 9th and 10th of May 2019.

Matteo Fasano, Rajat Srivastava, Annalisa Cardellini, Eliodoro Chiavazzo, Pietro Asinari, Department of Energy, Politecnico di Torino, Italy.

His presentation included the MODCOMP research and he presented the paper with the title: *"Thermal properties of nanomaterials predicted through atomistic-to-continuum models supported by machine learning"*, authors are:

For more information about the event please, [click here](#).



Attendees from the VECMA (Source of the picture: <https://www.vecma.eu/vecma-all-hands-meeting-ahm-2019/>)





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Athens Science Festival, Athens, Greece



MODCOMP project partners NTUA was actively involved in the Athens Science Festival that was organized from 3rd to 7th of April 2019 in Athens Greece. MODCOMP project was presented and attracted a large group of young students. More information about the event is available [here](#).



MODCOMP project stand



MODCOMP project stand with interested students about the project results

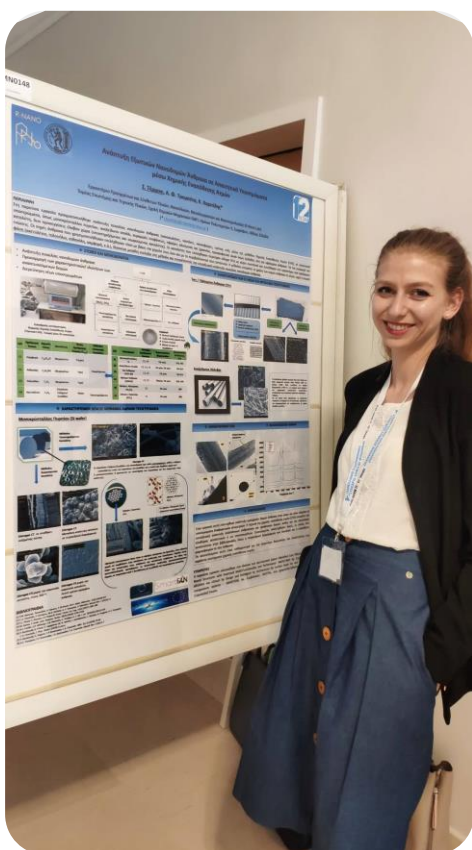




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12th Panhellenic Scientific Conference in Chemical Engineering, Athens, Greece

The 12th Panhellenic Scientific Conference in Chemical Engineering - 12 PESCHM took place on 29-30 May 2019, in Athens, Greece. MODCOMP partners attended the event and presented various topics and posters. More information about the event is available [here](#).



MODCOMP partners at the PESCHM





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Winning the Best poster Award at Euro Nano Forum 2019, Bucharest, Romania



MODCOMP project partners from NTUA and IRES

MODCOMP project partners actively cooperated at the EuroNano Forum, which took place from 12 – 14 June 2019 in Bucharest, Romania.



Dr. Elias P. Koumoulos, IRES

We congratulate the MODCOMP team from IRES for winning the best poster award.

MODCOMP partners also had an invited lecture entitled **"Applying machine learning to process and characterisation data of nanomaterials: A means for prediction"**, presented by Dr. Elias P. Koumoulos, from IRES.

More information about poster awards is available [here](#).



*Mr. Panayiotis Karayannis with the best awarded poster,
IRES*



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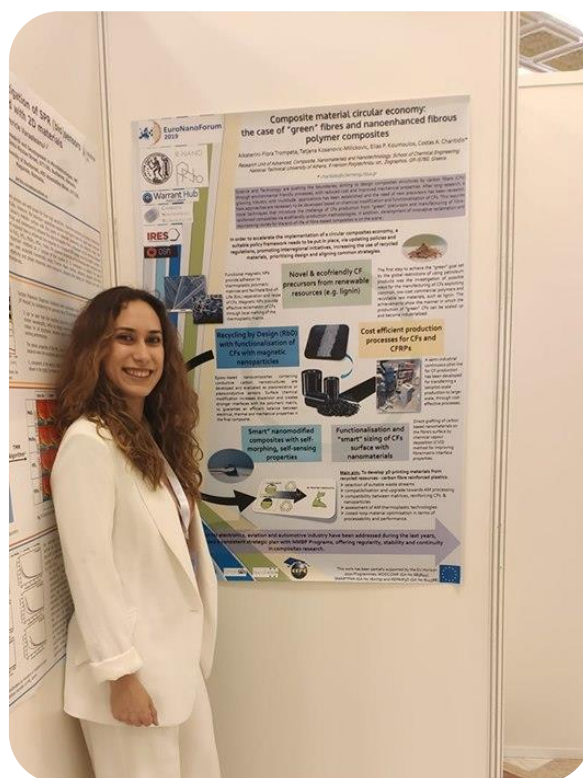
Dr. Elias P. Koumoulos, IRES

MODCOMP project partners attended the event and presented the MODCOMP work.

There were four publications in the conference proceedings additionally presented which are as follows:

1. **Towards novel exposure & risk assessment techniques for nanomaterials**, Authors: P.T. Karagiannis, E.P. Koumoulos, C. A. Charitidis
2. **Using a Data Management Plan for Materials Characterisation in Nanoindentation**, Authors: M. Kalogerini, N. Romanos, E.P. Koumoulos, C. A. Charitidis

3. **Composite material circular economy: the case of "green" fibres and nanoenhanced fibrous polymer composites**, Authors: A.F. Trompeta, T. Kosanovic-Milickovic, E.P. Koumoulos, C. A. Charitidis and
4. **Combining LCC and LCA for sustainability assessment in nanoenhanced high performance composites**, Authors: A. Gkika, F. Petrakli, N. Romanos, V. Stergiou, A.F. Trompeta, E.P. Koumoulos, C. A. Charitidis.



Ms. Aikaterini-Flora Trompeta, Msc., NTUA

More information about the event is available [here](#).



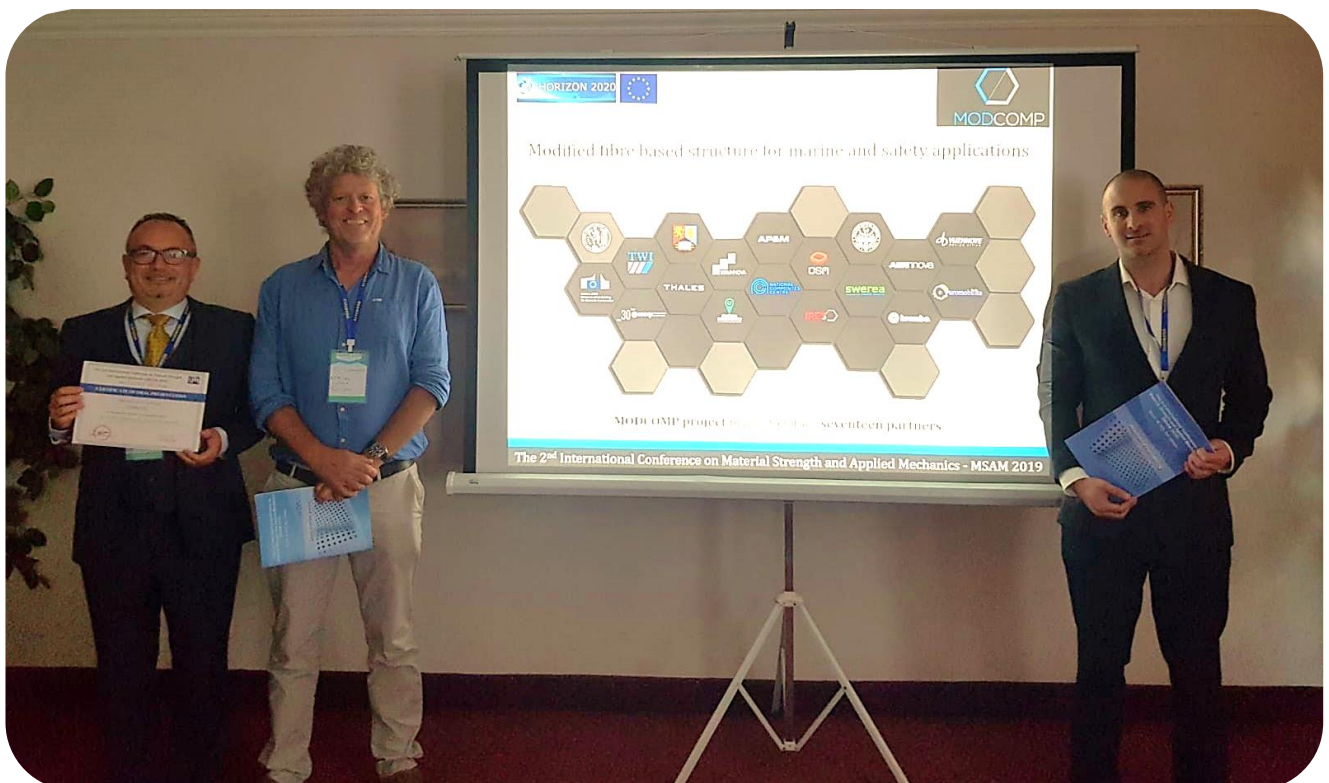
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Winning presentation at the 2nd International Conference on Material Strength and Applied Mechanics – MSAM 2019, Kiev, Ukraine

Congratulations to the MODCOMP team for winning the **Award for best presentation at the 2nd International Conference on Material Strength and Applied Mechanics** that took place from 27 - 30 of May 2019 in Kiev, Ukraine.

Mr. Christian Lira presented the paper "**Modified fibre-based structure for marine and safety applications**".

More details about the event are available [here](#).



MODCOMP team attending the MSAM 2019





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The 7th International Conference “Space Technologies: Present and Future”, Dnipro, Ukraine



MODCOMP team attending the “Space Technologies: present and Future” in Dnipro, Ukraine.

Meetings and discussions of MODCOMP project activities were held at Yuzhnoye State Design Office during 7th International Conference Space Technologies: Present and Future. The Conference was dedicated to the 65th Anniversary of Yuzhnoye SDO foundation.

Among hundreds of participants from Ukraine and 19 foreign countries, the event was attended by MODCOMP project partners: Yasser Essa (AED) and Mauro Giorcelli (POLITO).



MODCOMP team



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The conference guests participated in Plenary Session and different networking entertainments on the first day of the event.

On the next day, individual sessions started. At the session, dedicated to Advanced Materials and Technologies, Yasser Essa (AED) and Mauro Giorcelli (POLITO) presented their papers:

- Carbon fibers/ epoxy resin composite for aerospace applications.
- Lightning strike numerical simulation on composite aeronautical structure.



Mr. Yasser Essa, Ph.D., EASN, presenting his paper

The presented reports received heighten attention among attendees.

Yuzhnoye team also presented two papers during the Conference:

- Using nanodiamonds for higher carbon fibers strength
- Effect of electrochemical treatment on fiber strength



Mr. Mauro Giorcelli, Ph. D., POLITO, presenting his paper

Mauro Giorcelli celebrated his birthday in Dnipro, just before the Conference started. So, Iryna Husarova on behalf of Yuzhnoye team congratulated him and presented a memorable gift as a reminder of staying in Ukraine.



Mr. Mauro Giorcelli, Ph. D. and Ms. Iryna Husarova, Ph.D.

After that, there was a productive meeting between MODCOMP partners, in which some critical issues were discussed.



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As a cultural program, technical tours were organized for the conference guests, during which Yasser and Mauro also visited Yuzhnoye's pilot production, spacecraft assembly and testing facilities.

The Conference brought prospective ideas for future collaboration, new contacts and inspiration to each participant.

4th Composites @Manchester Research Workshop, UK



Surface activation and functionalisation of carbon fibres for improved IFSS of CFR composites

Y Liang^{1*}, X Li, D Semitekolos², A F Trompeta², C A Charitidis², M Giorcelli³,
Alberto Tagliaferro³ and H Dong¹

¹School of Metallurgy and Materials, University of Birmingham, Birmingham, UK

²School of Chemical Engineering, National Technical University of Athens, Athens, Greece

³DISAT, Politecnico di Torino, Torino, Italy

*Presenting author's email address: yxl452@student.bham.ac.uk



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HORIZON 2020



The 4th Composites@Manchester Research Workshop took place 25 - 26 June 2019 in Manchester University, UK.

The event brought together researchers working with composite materials and more than 120 delegates participated in the workshop.

Ms. Yana Liang, on behalf of MODCOMP project reported recent work from WP1 and WP3 and the title of her talk as indicated on left.

Her presentation gained great interests from the audience and the feedbacks on her report from the professional reviews were in high score: 4.5 out of 5.

More information is available [here](#).



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MATCOMP 2019 Conference, Vigo, Spain



MATCOMP 2019 Conference

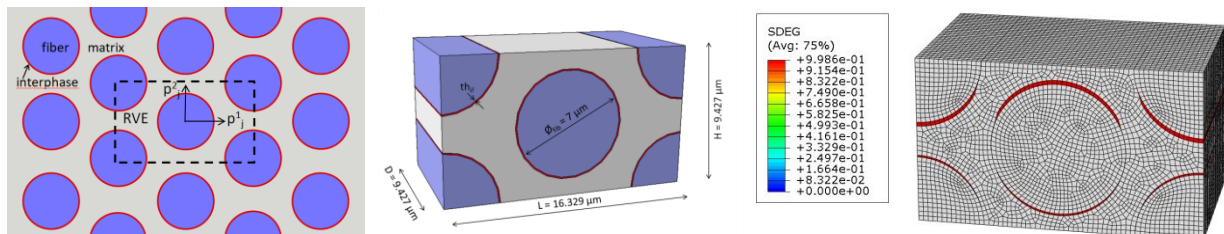


Ms. Clara Valero, Itainnova

MODCOMP project partners also attended MATCOMP conference, which took place from 3 - 5 July 2019 in Vigo, Spain.

Ms. Clara Valero presented the work on the topic “**Mechanical properties prediction of CFRP considering different carbon fiber surface treatments**”.

During the last period, the modelling approaches being used in MODCOMP have demonstrated their potential for the analysis and prediction of complex materials behaviours. As an example, the influence of different carbon fiber surface treatments in the strength properties of the MODCOMP composites has been investigated. This work has been presented in the MATCOMP 19 conference.



The influence of different carbon fiber surface treatments in the strength properties

More information about the conference is available [here](#).



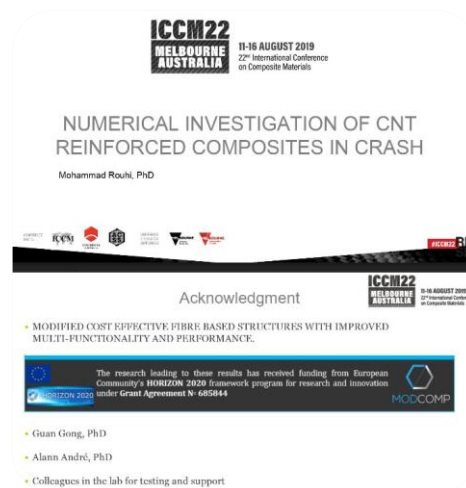
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ICCM22 - 22nd International Conference on Composite Materials, Melbourne, Australia

MODCOMP project partners attended the 22nd International Conference on Composite Materials 2019 which took place from 11 - 16 August 2019 in Australia.

Mr. Mohammad Rouhi, Ph. D. from SICOMP presented the paper "Numerical investigation of CNT reinforced composites in crash".

More information about the event is available [here](#).



Presentation from SICOMP

CIS 2019 Conference: A creative showcase where Chemistry meets Industry, Salerno, Italy

Mr. Mauro Giorcelli, Politecnico di Torino, participated at CIS 2019 Conference: a creative showcase where Chemistry meets Industry.

The conference took place from 28 - 30 August in Salerno, Italy.



CIS 2019 Conference



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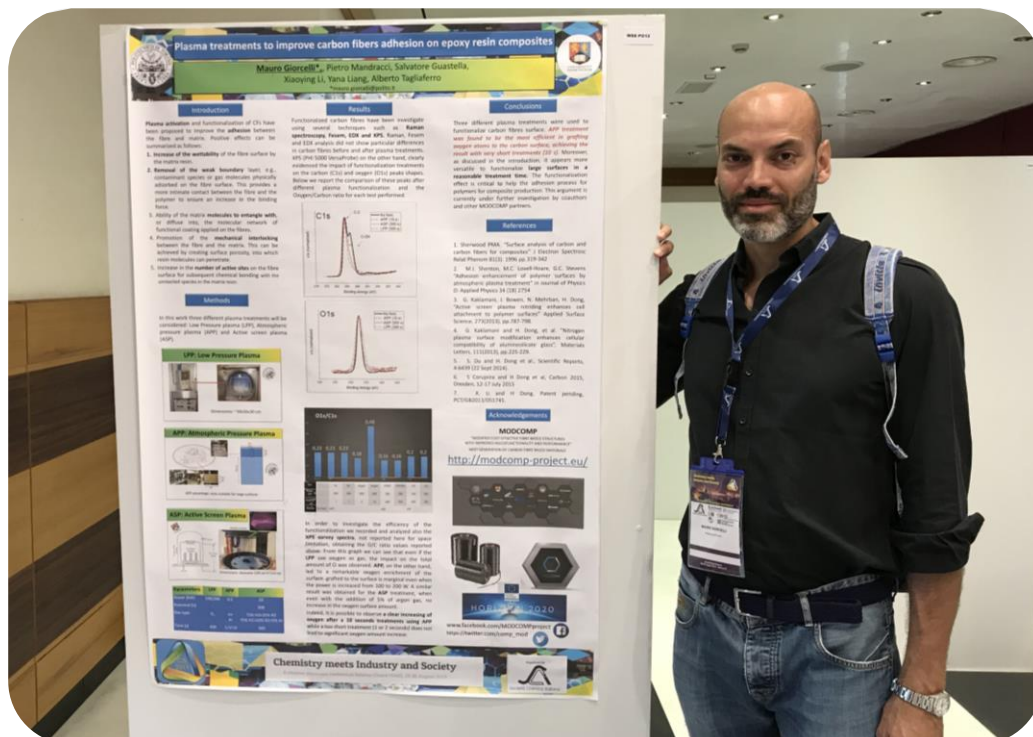
The conference had 8 different workshops on the following topics: Chemistry for Secure Society, Chemistry meets Bioeconomy, Smart Peptide Chemistry for Next Generation Industry in a Sustainable Society, Chemistry meets light: applications and perspectives in the fields of energy, environment, health, nanotechnology, food and cultural heritage, Sustainability of products, Mobility, Plastics and Environment, Smart Environment.

MODCOMP activity was presented in the poster session with a contribution entitled: **“Plasma treatments to improve carbon fibers adhesion on epoxy resin composites”**.

More information about the conference is available [here](#).



Mr. Mauro Giorcelli, Ph.D. at CIS 2019



Mr. Mauro Giorcelli, Ph.D. with the presenting poster at CIS 2019



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9th EASN International Conference on “Innovation in Aviation & Space”, Athens, Greece

The EASN Association, the National Technical University of Athens (R-Nano Lab) and the University of Patras organised the [9th EASN International Conference on “Innovation in Aviation & Space”](#) which took place in Athens, Greece from the 3rd until the 6th of September, 2019.



9th EASN International Conference on Innovation in Aviation and Space

Around 450 people attended the conference and shared their innovative ideas, breakthrough concepts and disruptive technologies. In total, 9 Key-Note Lectures and more than 360 technical presentations were distributed in approximately 70 sessions.

Also, 40 HORIZON2020 projects have disseminated their latest research results as well as the future trends on the respective technological field.



Conference Co-Chairmen: Prof. Costas A. Charitidis and Prof. Spiros Pantelakis

MODCOMP achievements related with the aviation and space field, were presented. Specifically, a MODCOMP session **“Aerostructures: Surfaces and Interfaces”** was organized by Prof. H. Dong (UOB), in which MODCOMP partners gave joint presentations with the latest results of the project:



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- “Application of Modified Carbon Plastics in Advanced Units of Aviation and Aerospace Structures”, YUZ, UOB
- “Improved IFSS of active screen plasma treated CFR composites”, UOB
- “Towards High-Performance Carbon Fibre Reinforced Composites - A Novel Plasma Surface Engineering Approach”, UOB
- “Improving carbon fibers / epoxy resin composite for Aerospace structural applications by functionalization”, POLITO, UOB
- “Assessing the Reinforcement Mechanism Through Nanoindentation Mapping Data of Nanoenhanced Composites”, IRES, NTUA

Prof Hanshan Dong and Dr Xiaoying Li chaired a session on Aerostructures: Surfaces and Interfaces.



Prof Hanshan Dong and Dr Xiaoying Li

MODCOMP project partners from POLITO, NTUA, YUZ, INEGI, RES, AERNOVA and UOB gave presentations on their research outcomes and achievements of the project.

The talks were interesting and active discussions on the industry applications of the technology developed, especially the active screen plasma surface treatment of the CFs, were carried out during the session and afterwards.

Dr. Yasser Essa presented the paper with the title: **“Numerical modelling of aerospace structure subjected to lightning strike phenomenon”**.



Dr. Elias P. Koumoulos at EASN 2019

Dr. Elias P. Koumoulos presented the lecture with the title: **“Assessing the Reinforcement Mechanism through Nanoindentation Mapping Data of Nanoenhanced Composites -a ML approach”**.



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MODCOMP Sessions

Yuzhnoye's team have presented the paper **"Application of Modified Carbon Plastics in Advanced Units of Aviation and Aerospace Structures"**, prepared by Yuzhnoye and University of Birmingham, based on MODCOMP achievements.



Mr. Sergii Velychko (YUZ) at EASN 2019

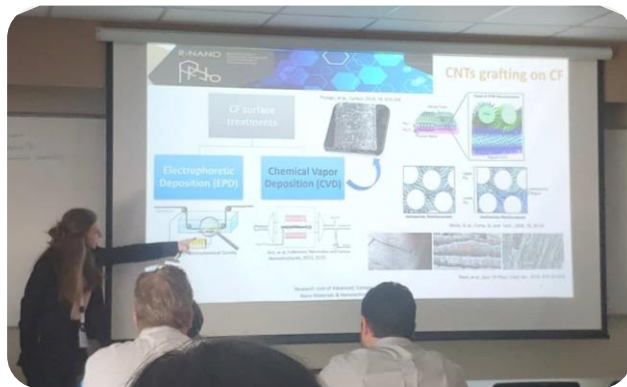


Mr. Igor Derevianko (YUZ) at EASN 2019



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In another session, entitled **“Nano-/micro-composites by design: methodologies and tools for enhanced properties against performance/reliability failure”**, organized by Prof. C. Charitidis, MODCOMP results related to composites reinforcing and mechanical assessment were presented by NTUA. The title of the presentation was: **“Novel Carbon Nanotube grafting on Carbon Fibres through Chemical Vapor Deposition: Investigation of epoxy matrix/fibre interface via nanoindentation test”**.



*Novel Carbon Nanotube grafting on Carbon Fibres through Chemical Vapor Deposition:
Investigation of epoxy matrix/fibre interface via nanoindentation test*

The 9th EASN International Conference on “Innovation in Aviation & Space” hosted an **Exhibition Area** where several representatives of the **Greek Aviation and Space ecosystem** demonstrated their work. R-Nano Lab had a booth, where video clips of achievements of MODCOMP project were presented, leaflets/newsletters were shared, and composites specimens were exhibited.



R-Nano Lab's Booth in EASN



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Last but not least, a short visit on the R-Nano's premises was organized for UoB partners, together with colleagues from the University of Science & Technology Beijing from China (Institute of Advanced Materials Technology and Corrosion & Protection Center). The visitors had a

tour in facilities related to the carbon fibres production and sizing at pilot scale, the chemical vapour deposition systems, the chemistry lab, the electrochemistry lab, as well as the advanced characterization lab (nanoindentation, AFM, etc).



Partners from UOB and University of Science & Technology Beijing in R-Nano Lab.



Visit in the CNTs Lab (left) and the Chemistry Lab (right).



Visit in the Electrochemistry and Composites Lab in R-Nano Lab.



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Publications in Journals, Conference proceedings and Workshops

1. Article in Journal MDPI: »[Heat transfer at the interface of graphene nanoribbons with various relative orientations and gaps](#)«, authors: Shahin Mohammadnejad, Masoud Bozorg Bigdeli, Rajat Srivastava and Matteo Fasano.
2. Manuscript: »[Deposition of Graphene and related nanomaterials by dynamic spray-gun method: a new route to implement nanomaterials in real applications](#)«, authors: Paolo Bondavalli, Didier Pribat, Pierre Legagneux, Marie-Blancine Martin, Louiza Hamidouche, Lilia Qassym, Aikaterini Flora Trompeta, Costantinos Charitidis.
3. Article in Journal : »[Development of Electrophoretic Deposition Prototype for Continuous Production of Carbon Nanotube-Modified Carbon Fiber Fabrics Used in High-Performance Multifunctional Composites](#)«, authors: Guan Gong, Birgitha Nyström, Erik Sandlund, Daniel Eklund, Maxime Noël, Robert Westerlund, Sofia Stenberg, Liva Pupure, Andrejs Pupurs, Roberts Joffe.
4. Article in Journal Elsevier: »[Study on the carbon nanotubes reinforced nanocomposite coatings](#)«, authors: Xiaochao Ji, Xiaoying Li, Helong Yu, Wei Zhang, Hanshan Dong.
5. Article in Journal Pergamon Press Ltd.: »[Biochar as a cheap and environmental friendly filler able to improve polymer mechanical properties](#)«, authors: Mauro Giorcelli, Aamer Khan, Nicola M. Pugno, Carlo Rosso, Alberto Tagliaferro.
6. Article in Journal MDPI: »[Mesoscopic Moment Equations for Heat Conduction: Characteristic Features and Slow-Fast Mode Decomposition](#)«, authors: Luca Bergamasco, Matteo Alberghini, Matteo Fasano, Annalisa Cardellini, Eliodoro Chiavazzo and Pietro Asinari.
7. Article in Journal MDPI: »[Plasma Surface Functionalization of Carbon Nanofibres with Silver, Palladium and Platinum Nanoparticles for Cost-Effective and High-Performance Supercapacitors](#)«, authors: Zelun Li, Shaojun Qi, Yana Liang,



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- Zhenxue Zhang, Xiaoying Li, Hanshan Dong.
8. Thesis/Dissertation: »[Analysis of mechanical properties of nanocomposite materials reinforced with functionalized carbon nanotubes based on molecular dynamics simulations](#)«, authors: Francesco Maria Bellussi (Itainnova), Pietro Asinari (POLITO), Agustin Chiminelli (Itainnova).
 9. Article in Journal MDPI: »[Heat transfer at the interface of graphene nanoribbons with various relative orientations and gaps](#)«, authors: Shahin Mohammadnejad, Masoud Bozorg Bigdeli, Rajat Srivastava and Matteo Fasano.
 10. Article in Journal Blackwell: »[Multiscale carbon fibre-reinforced polymer \(CFRP\) composites containing carbon nanotubes with tailored interfaces](#)«, authors: Raquel M. Santos, Diogo Vale, Jéssica Rocha, Carla Martins, Sacha T. Mould, Nuno Rocha.
 11. Publication in Conference VECMA All-Hands Meeting (AHM), 9-10 May 2019: »**Thermal properties of nanomaterials predicted through atomistic-to-continuum models supported by machine learning**«, authors: Matteo Fasano, Rajat Srivastava, Annalisa Cardellini, Elio Chiavazzo, Pietro Asinari.
 12. Article in Journal MDPI: »[Assessing the Critical Multifunctionality Threshold for Optimal Electrical, Thermal, and Nano-mechanical Properties of Carbon Nanotubes/Epoxy Nanocomposites for Aerospace Applications](#)«, authors: Aikaterini-Flora Trompeta, Elias Koumoulos, Sotirios Stavropoulos, Theodoros Velmachos, Georgios Psarras, Costas Charitidis.
 13. Article in Journal MDPI: »[Nano-Graphitic based Non-Volatile Memories Fabricated by the Dynamic Spray-Gun Deposition Method](#)«, authors: Paolo Bondavalli, Marie Martin, Louiza Hamidouche, Alberto Montanaro, Aikaterini-Flora Trompeta, Costas Charitidis.
 14. Article in Journal MC: »[FE Mechanical properties prediction of CFRP considering different carbon fiber surface treatments](#)«, authors: C. Valero, A. Chiminelli, M. Laspalas, F. Serrano, C.Sáenz.
 15. Article in Journal Polymer Testing: »[Evaluation of the creep behaviour of the carbon fibre in an unidirectional pultruded reinforced composite using nano-indentation technique](#)«, authors: Zhenxue Zhang, Santiago Corujeira Gallo, Xiaoying Li, Hanshan Dong, Dimitrios Dragatogiannis, Costas A. Charitidis.



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16. Article in International Journal of Structural Integrity: »[Enhancement of mechanical integrity of advanced composites using PMAA-electropolymerised CF fabrics](#)«, authors: Dionisis Semitekolos, Panagiotis Goulis, Despoina Batsouli, Elias P. Koumoulos, Loukas Zoumpoulakis, Costas A. Charitidis.

17. Article in Journal MDPI: »[Research and Development in Carbon Fibers and Advanced High-Performance Composites Supply Chain in Europe: A Roadmap for Challenges and the Industrial Uptake](#)«,

authors: Elias P. Koumoulos, Aikaterini-Flora Trompeta, Raquel-Miriam Santos, Marta Martins, Cláudio Monterio dos Santos, Vanessa Iglesias, Robert Böhm, Guan Gong, Agustin Chiminelli, Ignaas Verpoest, Paul Kiekens, Costas A. Charitidis.

18. Article in Journal MDPI: »[Constituents Phase Reconstruction through Applied Machine Learning in Nanoindentation Mapping Data of Mortar Surface](#)«, authors: Elias P. Koumoulos, Konstantinos Paraskevoudis, Costas A. Charitidis.

Next Events

*NanoSafety Cluster Week
| 7 – 10 October 2019, Copenhagen, Denmark*



**NanoSafety
Cluster**



October 7: caLIBRAte Final Conference - Building Confidence on Risk Assessment and Governance of Nanomaterials

You will learn and discuss about:

- Results of the stakeholder interactions on risk assessment and governance aspects,
- Challenges in existing data completeness and abundance for risk assessment tool testing,



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- New toxicological data and exposure studies,
- Tool performance testing results and
- Nano-risk governance framework development
- The new nano-risk governance web-portal (launch October 2019)

October 8-9: Open Conference: Towards in silico nanosafety assessment – integrating experimental and computational approaches.

Themes are:

- Exposure assessment along the life-cycle of nanomaterials and nano-enabled products
- Hazard assessment along the life-cycle of nanomaterials and nano-enabled products
- Nanosafety data management tools: from experiment to knowledge
- Risk assessment and risk management solutions
- Systems biology and mechanistic insights for nanosafety
- Nanoinformatics and predictive modelling
- Categorization and grouping of nanomaterials
- Tools and approaches for safe-by-design of nanomaterials and processes

October 10: Three parallel events:

- NanoSafety Cluster open meeting, and Working Group Meetings, Steering Group Meeting
- Introduction and training in the caLIBRAte Nano Risk Governance Portal and supporting risk assessment and management tools (caLIBRAte)
- Introduction and training in tools for decision-making in analytical characterization (ACEnano)

For more information about the event, please [click here](#).

For registration, please [click here](#).

Future materials 2020 International Conference, Lisbon, Portugal

MODCOMP project partners will attend the **Future Materials 2020 International Conference**, where Dr. Christian Lira (NCC) will present the work with the title: **“Nano-modified fibre based structure for enhanced reliability”**.

More information about the event is available [here](#).





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MODCOMP Final Event -2020, Bergamo, Italy



MODCOMP Consortium is happy to invite you to the MODCOMP final conference, which will take place in **Beginning of March 2020 in Bergamo, Italy**. The exact dates will be published this Autumn.

The aim of the final event is to present:

- MODCOMP project: aim and presentation of our specific goals.
- Strategy and main results about treatments on fiber and resin (mainly focused on strategy used with video already available).
- Demonstrators shown and explained by “stands exposition”.

The MODCOMP conference is free of charge.








The conference will take place at the **BREMBO S.p.A., Via Europa, 2 - 24040 STEZZANO (BG) Italy**
For more information about the event, please follow <http://modcomp-project.eu/> and our social media.

Welcome!





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<p><i>SOCIAL MEDIA</i></p>	<p> <u>https://www.facebook.com/MODCOMPproject</u>  <u>https://www.linkedin.com/company/modcompproject/</u>  <u>https://twitter.com/comp_mod</u></p> <p>You can also use #modcomp on Social Media and get the newest information about the project progress from all partners.</p>