

NEWSLETTER #3

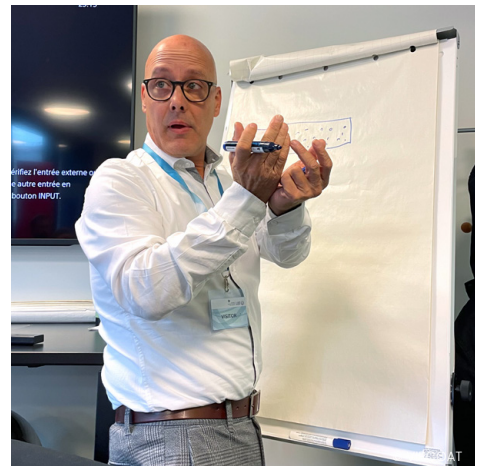
Project activities 01/2023 – 10/2023



**Virtual Open Innovation Platform
for Active Protective Coatings Guided
by Modelling and Optimization**



MILESTONE



LATEST
ACTIVITIES



EU-PROJECTS
COOPERATION

VIPCOAT received funding for a period of 4 years from the European Union's Horizon 2020 research and innovation programme, which started on May 1, 2021. Our consortium comprises 12 participants (5 companies and 7 research institutions) from 8 countries

(BE, DE, FR, LU, NL, NO, PT, UK) who gather all necessary background and expertise to deliver an Open Innovation Platform (OIP) to support the development of new coating materials.

www.vipcoat.eu

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MILESTONE

ALPHA-RELEASE OF THE VIPCOAT OIP

M24 Consortium Meeting: May 31 - June 02, Trondheim, Norway

On May 31 - June 02 the VIPCOAT consortium met at SINTEF Ocean in Trondheim. 25 consortium members discussed the current progress, challenges and open questions in the project development. The achievement of an important milestone of the project - Alpha release of the VIPCOAT OIP - was reported at the event.

The alpha version of the OIP includes the implementation of the co-creation aspect at the innovation process and involving all four stakeholder groups into co-development of the active protective coatings. Thus, Social Helix is integrated and currently accessible at the OIP. Additionally, to support the interrelation between all four helixes, a standardized BPMN (business process modeling and notification) processes has been implemented at the technical level of the platform. Moreover, Appl (use case application) related functions on the predictive inhibitor selector workflow has been validated and prepared to the testing phase.

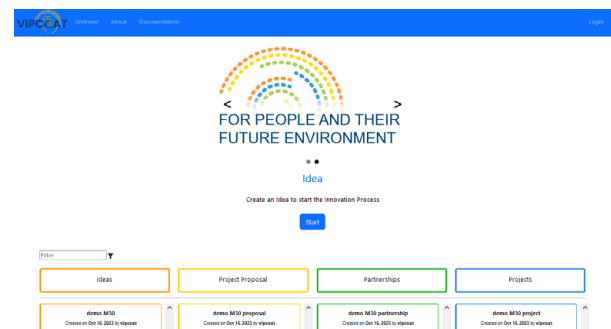
After the internal workshop and demonstration of the VIPCOAT OIP at the M24-stage, the consortium agreed that the Milestone on the Alpha-release of the VIPCOAT OIP has been

successfully achieved.

The platform is accessible from web-browser and has an authentication server that handles registering and authentication of the users following the General Data Protection Regulation (GDPR).

Would you like to find out more about the Open Innovation Platform? Just click on the image or visit:

<https://vipcoat-oip.com/welcome>



M24 Consortium Meeting: May 31 - June 02, Trondheim
© VIPCOAT



M24 Consortium Meeting at SINTEF Ocean
© VIPCOAT



Natalia Konchakova, Thomas Hagelien, Heinz A. Preisig, (from left to right) It was the birthday of Professor Preisig at the last day of the CONSORTIUM MEETING. © VIPCOAT

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LATEST ACTIVITIES

JANUARY

Cardanit BPMN editor

SMT lab



© SMT

The consortium partner Smallmatek is applying the BPM approaches and adopting the Cardanit BPMN editor by help of LIST (Luxembourg Institute of Science and Technology) to save time and effort in coating materials development.

[Read more](#)

CEN Workshop

Prof. Heinz A. Preisig, the scientific leader of NTNU team and a partner of VIPCOAT consortium, led the preparation and publication of new CEN Workshop Agreement "ModGra - a Graphical representation of physical process models"



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Some VIPCOAT consortium partners actively participated in the discussions and preparation of this important document. The work was done together with the **MarketPlace** project consortium.

[Read more](#)

FEBRUARY

VIPCOAT Exploitation and Business Planning Workshop



Internal Workshop at LIST ©VIPCOAT

The focus of the workshop was „How to Turn VIPCOAT Idea Into a Product and Launch it“.

It was the Exploitation and Business Planning Event organised at Luxembourg Institute of Science and Technology (LIST).

Innovation is not an easy process, but it has the power to propel you into the business world and open doors. All partners participated in the meeting on February 09-10. The outcome of the event was discussed at M24 CONSORTIUM MEETING.

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Cooperation Workshop of three Open Innovation Platforms (OIP) projects



On February 09, VIPCOAT project was presented at the Cooperation Workshop of three Open Innovation Platforms (OIP) projects. The lecture "From Modeling to Simulation" has been given by **Prof. Heinz A. Preisig** (NTNU).

The content of the [CWA 17960:2022](#) "ModGra - a Graphical representation of physical process models" was explained in details for the OIP community.

[AGENDA \(731 KB\)](#)

Digital Support of Advanced Nano Technologies for Active Protective Coatings

On February 23-24, a contribution from VIPCOAT project "Digital Support of Advanced Nano Technologies for Active Protective Coatings" was provided to Final Networking event of SusNanoFab project at TU Wien. The coordinator, **Natalia Konchakova** (Hereon), presented the project general objectives and aims.

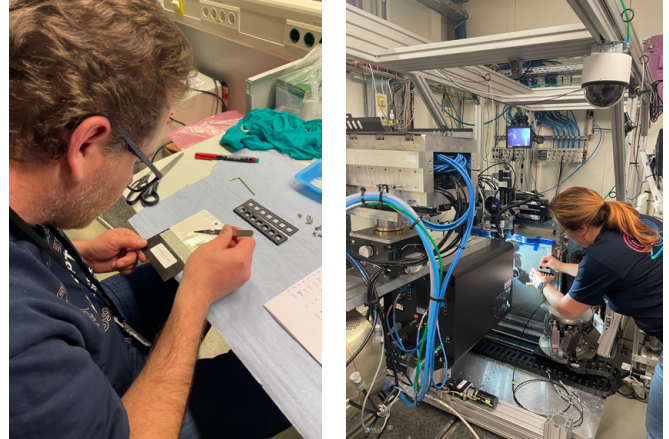


MARCH

Experiments at the DESY

VIPCOAT consortium successfully carried out a nano-diffraction experiment using DESY facilities on March 09-14. During the 15 beamline shifts, the team gained new results, which will help to understand the

phenomena on the behavior of LDH based coating systems. Congratulations to the whole team!



VIPCOAT-Team at DESY, March © VIPCOAT

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ECCA Webinar

On March 23, **Natalia Konchakova** (Hereon) and **Peter Klein** (Fraunhofer ITWM) presented the current stage of the VIPCOAT OIP at the European Coil Coating Association (ECCA) webinar. The structure of the B2B2B environment and the platform functionality were demonstrated and discussed with protective coating manufactures.

APRIL

CORROSION@MANCHESTER: April 04, Manchester, UK

On April 04, 2023 an invited talk “Combined experimental and modelling to predict corrosion and protection properties of coated metals” has been given by **Herman Terryn** (VUB) at the University of Manchester, UK. Herman contributed to the event “CORROSION@MANCHESTER: 65 years of excellence and impact”.

MAY

9th ASST Symposium: May 21–25, Stockholm, Sweden



VIPCOAT-Consortium Members at ASST Symposium
©VIPCOAT

VIPCOAT consortium members, **M. Zheludkevich, A. Mol, S. Lamaka, H. Terryn, C. Özkan, and N. Abdelrahman**, represented their work at the Aluminum Surface Science & Technology Symposium 2023 (ASSTS-2023) on 21–25 May in Stockholm. The contributions covered both important topics – predictive modeling and experimental validation of the active protective coatings for AA2024.

Arjan Mol (TU Delft) provided a lecture titled “Towards machine-learning-based corrosion inhibitor discovery by consistent, reliable and time-resolved electrochemical analysis”. He discussed the next steps required for corrosion inhibitor discovery, both from a predictive analytics and experimental design perspective.

Can Özkan (TU Delft) reported time-resolved electrochemical studies of AA2024-T3 corrosion inhibition providing a deep analysis of sodium dichromate vs. high-performing organic inhibitors.

Nouhran Abdelrahman (VUB) presented her work in finite element modelling of the corrosion protection of aluminum alloy AA2024 through the utilization of active coatings. A 2D finite element Multi-Ion Transport and Reaction model of a defect has been developed for the active protective coating of the AA2024-T3 surface and the electrolyte. The model describes the leaching mechanism of the inhibitor particles Li_2CO_3 within the coating as well as their diffusion within a defect. The leaching mechanisms have been fitted to experimental measurements. Predictions of the concentrations of the inhibitor particles (Li_2CO_3 and Li) made using the developed FEM model and compared to measured values.

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JUNE

DESY experiment - nano tomography of LDH coatings: June 09-12, Hamburg, Germany



Claudia Rocha (SMT)
© VIPCOAT

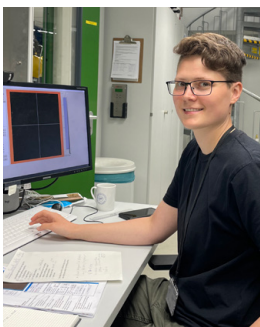
An experiment titled "Leaching by design: synergy between smart nanocontainers and inorganic extenders for active corrosion protection of AA2024" has been successfully carried out by VIPCOAT team on June 09-12. The important results on 3D microstructure

images of new coating systems have been collected using SR-nano-CT at PO5 station of DESY. The image data gained in this experiment yields valuable structural information, in particular on LDH structures with a corrosion inhibitor. The



Pelin Duru (AIRBUS)

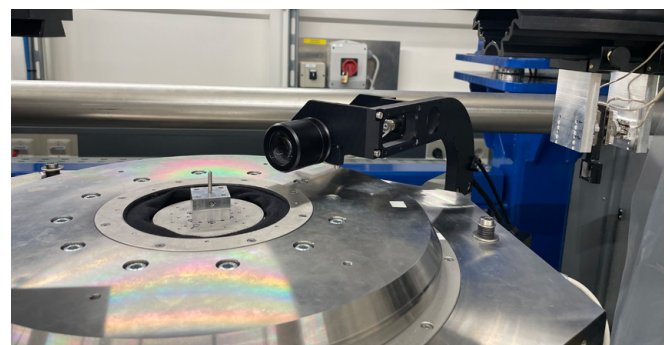
experiment supported the improvement of the leaching kinetics understanding for coatings including LDH nano containers. The focus was on collecting knowledge on how the leaching kinetics can be controlled by designing the coating microstructure by introducing soluble extenders to facilitate the formation of interconnected pathways. Five coating systems were investigated: Reference coating with LDH at 10% PVC (pigment volume concentration) without soluble extenders, coatings containing LDH at 10% PVC and two different soluble extenders with 10% and 20% PVC of each one.



Alex Keilmann (ITWM)
© VIPCOAT



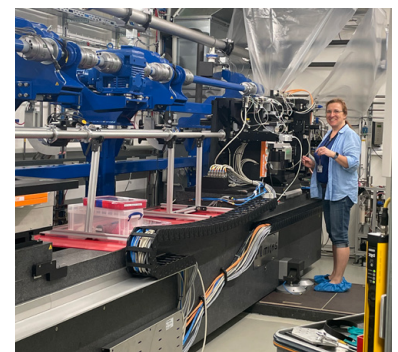
VIPCOAT-Team, June © VIPCOAT



nano-CT set up © VIPCOAT



Frederico Maia (SMT)
© VIPCOAT



Beam line P05
© VIPCOAT

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EuroNanoForum2023: June 11-13, Lund Sweden

European Materials Characterization Council (EMCC) successfully organised the session „Advanced materials characterisation: Digitalisation and Materials Innovation Markets on the spot“ in EuroNanoForum 2023 main programme (June 11-13). VIPCOAT consortium members Peter Klein (Fraunhofer ITWM) and Natalia Konchakova (Hereon) contributed to the panel discussion of the event.



Panelists of EMCC Session at EuroNanoForum 2023
© VIPCOAT

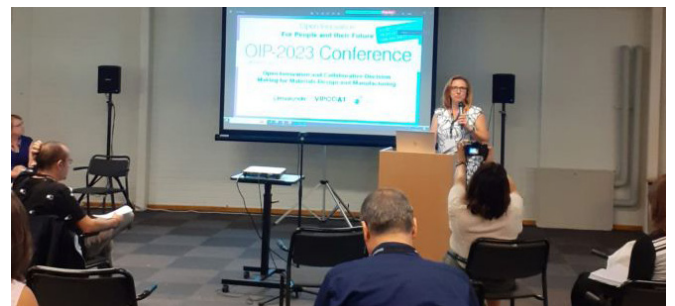


OITB Workshop 2023: June 14, Lund Sweden

On June 14, VIPCOAT consortium was represented by the coordinator at the Open Innovation Test Beds (OITB) workshop at the EuroNanoForum2023 in Lund, Sweden. An announcement and invitation to participate in the OIP-2023 conference organized by three OIP projects: VIPCOAT, MUSICODE and OpenModel were provided at the event.

Look more at this Link:

<https://www.youtube.com/watch?v=DVxvDbIK8AU>



ESCAPE33: June 18-21, Athens, Greece



Vinay Gautam (NTNU), Natalia Konchakova (Hereon), Heinz A. Preisig (NTNU) and Peter Klein (Fraunhofer ITWM) represented the consortium at the conference.

VIPCOAT project provided three contributions to the scientific program of ESCAPE33 conference, presenting Translation Ontology and a Cloud-based Collaborative Interactive Platform for Dynamic Process Modelling, and discussing the aspects of the Green Transition.

LATEST ACTIVITIES

Moreover, a technical collaboration of **VIPCOAT** and **MarketPlace** projects has been demonstrated at the **ESCAPE33**.

1) A Cloud-based Collaborative Interactive Platform for Education and Research in Dynamic Process Modelling, Vinay Gautam, Alberto Rodriguez-Fenandez, and Heinz A. Preisig. PROCEEDINGS OF THE 33rd European Symposium on Computer Aided Process Engineering (ESCAPE33), <https://www.sciencedirect.com/science/article/abs/pii/B978044315274050562X>

2) Into the Valley of Death Rode the Green Transition, Robert Pujan and Preisig, Heinz A. PROCEEDINGS OF THE 33rd European Symposium on Computer Aided Process Engineering (ESCAPE33), <https://www.sciencedirect.com/science/article/abs/pii/B9780443152740504066>

3) Translation Ontology of optimal Decision Making along a Distributed Production Chain by Example, Peter Klein, Heinz A. Preisig, and Natalia Konchakova. PROCEEDINGS OF THE 33rd European Symposium on Computer Aided Process Engineering (ESCAPE33), <https://www.sciencedirect.com/science/article/abs/pii/B9780443152740503334>



Robert Pujan (NTNU)



Poster session © VIPCOAT

ICEAF-7: June 21-23, Spetses, Greece

VIPCOAT consortium organized a session on environmentally induced degradation and damage at the ICEAF-7 conference. Mikhail Zheludkevich (Hereon), Natalia Konchakova (Hereon), Peter Klein (Fraunhofer ITWM) and Heinz A. Preisig (NTNU) participated at the conference to present new modeling results and discuss actual approaches in interoperability of experimental and modeling data sharing along the production chain.



Peter Klein (Fraunhofer ITWM)
© VIPCOAT



Mikhail Zheludkevich (Hereon), Nick Birbilis (Deakin University), Natalia Konchakova (Hereon), Peter Klein (Fraunhofer ITWM)
© VIPCOAT

ICCS26 and MECHCOMP-8: June 27-30, Porto, Portugal

On June 27-30, 2023, **Salim Belouettar** (LIST) got a **plenary talk** titled "Towards an Open Innovation Concept for Materials Modelling and Design. Case of VIPCOAT, MEDIATE and SUMO EU Projects" at the JOINT EVENT: ICCS26 – 26th International Conference on Composite Structures & MECHCOMP8 – 8th International Conference on Mechanics of Composites

The conference took place at the University of Porto, Portugal. The event provided a large forum for industrial specialists and materials scientists / researchers working together under advanced materials design and innovations implementation using digital platforms.

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JULY

OpenFOAM Workshop 2023: July 11-14, Genoa – Italy

Hrvoje Jasak (WIKKI) and **Marko Horvat** (WIKKI) participated in the 18th OpenFOAM Workshop 2023 to present a novel modeling approaches and discuss with the OpenFOAM community the ideas and challenges in the Open Innovation Platform implementation.



AUGUST

EUROCORR2023: August 26–31, Brussels

The central scientific event for the VIPCOAT consortium is the EUROCORR conference. This year the congress took place in Brussels on August 26–31. The consortium was very well represented at the conference contributing to different scientific sessions. **16 oral presentations** have been given by VIPCOAT consortium members. The main topic was evaluating new corrosion inhibitors as chromate replacements through electrochemical experiments and predictive modeling. VIPCOAT project achievements were also reported in the **plenary lecture** given by **Sviatlana Lamaka** (Hereon) on the first day of the congress.



Sviatlana Lamaka (Hereon) © EUROCORR



Katja Schladitz (Fraunhofer ITWM) © VIPCOAT



Mikhail Zheludkevich (Hereon) © EUROCORR



Young EFC discussion © EUROCORR



VIPCOAT at EUROCORR 2023 © EUROCORR

The consortium organized a **join session** and the **round table on Multiscale modelling for design of protective coatings**.

[EFC+NEWSLETTER+August+2023.pdf](#)
(efcweb.org)

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SEPTEMBER

74th Annual meeting ISE: September 03–08, Lyon, France

On September 04, 2023, **Herman Terry**n (VUB) presented a **keynote lecture** "Corrosion Protection of Metals by Coatings: Changes in Protection Strategies and Lifetime Prediction Tools over the last Decades" at 74th annual meeting of the International Society of Electrochemistry.

[Read more](#)

FedCSIS 2023: September 17–20, Warsaw, Poland

Team of LIST (**Christophe Feltus**, **Damien Nicolas**, **Carlos Kavka**, **Djamel Khadraoui**, and **Salim Belou**ttar) presented a method for ontological integration of BPMN and EMMO at 18th Conference on Computer Science and Intelligence Systems (FedCSIS) in Warsaw. The focus of the research is to find an effective way toward open innovation efficiency.

[Read more](#)

<https://annals-csis.org/proceedings/2023/drp/8906.html>

SMT35: September 18–22, Hamburg, Germany

Lisa Sahlmann (Hereon), **Mikhail Zheludkevich** (Hereon), **Natalia Konchakova** (Hereon), and **Frederico Maia** (SMT) presented results on selection of effective corrosion inhibitors for Aluminium based surfaces using data-driven techniques at SMT35 conference. The VIPCOAT team demonstrated also benefits for industrial and academic researchers from proper data documentation and interoperable data sharing through digital environments.



Lisa Sahlmann (Hereon) ©Hereon



Mikhail Zheludkevich (Hereon), Thomas Klassen (Hereon), Matthias Rehahn (Hereon), Anna Cattani-Scholz (Helmholtz-Gemeinschaft, Brüssel), Natalia Konchakova (Hereon) (from left to right) ©Hereon

KLAIM2023: September 25–27, Kaiserslautern, Germany

Peter Klein (Fraunhofer ITWM) provided a lecture on ontological tools and interoperability for complex materials at MATHEMATICAL RESEARCH DATA symposium of the Kaiserslautern Applied and Industrial Mathematics Days – KLAIM 2023. Technical collaboration of VIPCOAT and OntoTrans projects was demonstrated in the presentation.

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MLE Days 2023: September 25–27, Hamburg, Germany

On September 25–27, 2023, Hamburg University of Technology hosted a two-days conference “Machine Learning in Engineering” which was co-organized by Hereon. **Christian Feiler** and **Lisa Sahlmann** participated in the event as Trainers and represented VIPCOAT consortium at the Summer School with the elevator pitch titled “Selection of Effective Corrosion Inhibitors for Aluminium based on Data-Driven Techniques”. **Lisa** won the **1st place** of the pitch and poster price.



OCTOBER

Digital Total 2023: October 9–10, Hamburg, Germany

On October 9–10, 2023, University of Hamburg is organizing and conducted by the House of Computing & Data Science (HCDS) a two-day event „Digital Total“, in collaboration with partners from the scientific platform PIER PLUS and the Academy of Sciences and Humanities in Hamburg. **Lisa Sahlmann** and **Christian Feiler** (Hereon) participated in the conference presenting a poster.

<https://www.hcde.uni-hamburg.de/en/current/all-events/digital-total.html>

M30 Consortium Meeting: October 18–19, Luxembourg

On October 18–19, 2023, representatives of all VIPCOAT partners met at the University of Luxembourg to discuss the project progress at M30 stage. Technical discussion of the first day of the meeting was focused on challenges and open questions in modeling techniques, data generation, new coating systems testing and industrial requirements, as well as on challenges with the Open Innovation Platform implementation and new protective coatings design. Interactive workshop on Automatization of Translation process and demonstration of the OIP new features at the Open Innovation Facilitation workshop finalized the program of the technical day. On the second day, partners discussed the exploitation strategy, provided scientific / technical reports, and agreed on the actions plan for the next 6-months period.

We are looking forward to meeting at M36 at TU Delft and discussing the progress and next steps for VIPCOAT implementation.



M30 Consortium Meeting at LIST
© VIPCOAT

LATEST ACTIVITIES

OIP-2023 Conference

The OIP-2023 conference, a scientific and technical event dedicated to exploring and promoting the principles of **open innovation and collaboration in the field of materials modeling, design and manufacturing**, has been organized by VIPCOAT consortium with the support of the coordinators of MUSICODE and OpenModel projects.



It was a scientific and technical event dedicated to exploring and promoting the principles of open innovation and collaboration in the field of materials modeling, design and manufacturing. The conference served as a platform for researchers, industry professionals, policy makers, and innovators from Europe and around the world to come together and share their knowledge, insights, and experiences. The primary objective of OIP-2023 was to foster an environment of openness, transparency, and collaboration in materials design and manufacturing. It recognizes that the challenges faced by the industry can be effectively addressed through interdisciplinary collaboration and



the sharing of ideas, data, and resources. The conference aimed to break down traditional silos and facilitate the exchange of information between academia, industry, and other stakeholders.



Zoi Kefallinou (AIRBUS)



Marko Horvat (WIKKI)



Participants of OIP-2023 © VIPCOAT

More than 60 scientists and industrial specialists have been registered and participated at this physical event both days.

The meeting covered important topics of Open Innovation, AMI2030 and SRIA, Safe and Sustainable by Design materials and tools, and technical challenges in the implementation of OIPs for different industrial applications.

The OIP-2023 was a very successful event, which collected many ideas, possible solutions and plans for future collaboration and cooperation of the participants.

Moreover, as a reply to the kind request for the further action, VIPCOAT consortium decided to organize the next OIP conference in October 2024 in Kaiserslautern, Germany.

Read more

<https://oip-2023.eu/program/>

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UPCOMING EVENTS

CONTRIBUTED BY VIPCOAT

57th ECCA Autumn Congress – Brussels, November 20–21, 2023

The progress on VIPCOAT project and interrelation of the OIP with the new Coordination and Support Action focused on creation of Digital Materials and Product Passport (DigiPass) will be presented at the ECCA Autumn Congress on November 21.



1st MACRAMÉ Regulatory Risk Assessors Summit, November 27–28, 2023

The View of Researchers on Risk Assessment in the context of the Life Cycle of materials will be presented by VIPCOAT consortium from the perspective of active protective coating development using OIP. The possibility and end-users benefit to operate executing VIPCOAT platform will be discussed.

[Read more](#)

[Agenda](#)

WORKSHOP of NMBP–35 projects: NanoMECommons, EASI–STRESS and CHARISMA, January 17, 2024

VIPCOAT consortium will provide contributions to the European Materials Characterisation Council (EMCC) Roadmap, which will be discussed at the joined Workshop.

FOR PEOPLE AND THEIR
FUTURE ENVIRONMENT

(CO-)ORGANIZED BY VIPCOAT

EUROCORR 2024, September 1–5, 2024

A focused session and a round table discussion on Multi-scale modelling for design of protective coatings will be organized by VIPCOAT consortium at EUROCORR 2024 <https://eurocorr.org/>



OIP-2024, October 21–23, 2024

We are aiming to organize the next OIP conference on October 21–23, 2024, at Fraunhofer ITWM in Kaiserslautern, Germany. The event will include a final VIPCOAT Workshop.



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MEET THREE BEHIND VIPCOAT



Lisa Sahlmann

PhD Student at Hereon

Interview



Nourhan Abdelrahman

PhD Student at VUB

Interview



Can Özkan

PhD Student at TU Delft

Interview

PARTNERS BEHIND VIPCOAT



The VIPCOAT Project received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 952903.

Do you want more information about VIPCOAT? [Visit our website](#) or check [#VIPCOAT](#)