



UNAT

Ultra-small Nanohybrides for Advanced Theranostics

Newsletter 4 – November 2023

Consortium



Lyon 1

Coordinator

Université Claude
Bernard Lyon 1
France



Science Park
Taras Shevchenko University of Kyiv

Corporation
Science Park
Taras
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University Of Kyiv
Ukraine



National Research Council of Italy

Consiglio
Nazionale Delle
Ricerche
Italy



Bioemission
Technology
Solutions IKE
Greece



Glincs
France

The project

Nanoscale materials have gained a place in the spotlight as enablers of combination diagnostic-therapeutic technologies due to their tiny penetrating sizes and their unique functional properties.

Nanohybrids that contain both organic and inorganic components, including metallic ones, offer tremendous opportunity for the functionalisation of biological or bioactive molecules.

The EU-funded UNAT project will explore the capabilities of metal-carbon nanohybrids for multimodal in vivo imaging and therapy of tumours via electromagnetic radiation.

The diagnosis and therapy of cancer will be evaluated through an ambitious campaign of preclinical in vitro and in vivo experiments.

Key figures

5 years (2021-2026)

5 partners

4 countries

832 k€

More information on www.unat-project.eu

Annual visit of ISSMC-CNR laboratories for students of the Bedandi middle school



On March 30, 2023, the students of the Bedandi middle school in Faenza visited the laboratories of the ISSMC-CNR. Among the proposed activities, Dr. Federica Mancini explained to the children what carbon-dots are and what they are for, and how it is possible to obtain them from by-products of the food industry.

Annual Conference of the Architects of Nano-hybrid – Nanohybrids XIX-2023

The annual conference Nanohybrids XIX-2023 took place from 21st May 2023 to 25th May 2023, Porquerolles–France <https://ulrichdabost.wixsite.com/nanohybrid>



This conference is devoted to synthesis, characterizations and applications of nanohybrid compounds with a special focus on biological applications. It is addressed to academic researchers as well as to clinicians and industrial participants.

It was the excellent opportunity for a group of UNAT members to present their work to their colleagues from other multidisciplinary research teams.

PROGRAMME :

23th May: Imaging and spectroscopy

12:00 – Intervention of **LYSENKO Vladimir**

“ Förster resonance energy transfer between multicolor fluorescent carbon dots ”

24th May – Carbon based nanohybrids

10 :00 – Intervention **ZADERKO Alexander**

“ Soft fluorination of carbon nanostructures for multidisciplinary applications. ”

10 :20 – Intervention of **TOPCHYLO Anna**

“ Physico-chemical properties of fluorinated carbon dots for bio-imaging applications.”

12:00 – Intervention of **PALIENKO Konstantyn**

“ Green synthesis of Gd³⁺-doped ultrasmall carbon-based nanohybrids from coffee wastes ”

12 :20 – Intervention of **KUZNIETSOVA Halyna**

“ Chronic in vivo toxicity of Gd³⁺ doped ultrasmall carbon-based nanohybrids ”

3 Recent publications co-authored with the Ukrainian partners in Scientific Reports, Discover Nano & Science Direct

Revue : Scientific Reports

Title: “ **A comparative multi-level toxicity assessment of carbon-based Gd-free dots and Gd-doped nanohybrids from coffee waste: hematology, biochemistry, histopathology and neurobiology study** ”

Authors: Halyna Kuznietsova, Natalia Dziubenko, Konstantin Paliienko, Natalia Pozdnyakova, Natalia Krisanova, Artem Pastukhov, Tetiana Lysenko, Marina Dudarenko, Valeriy Skryshevsky, Vladimir Lysenko & Tatiana Borisova

DOI: 10.1038/s41598-023-36496-4 - [Open access link on HAL](#)

Revue : Discover Nano

Title: “ **In vitro and in vivo toxicity of carbon dots with different chemical compositions** ”

Authors: Halyna Kuznietsova, Alain G elo en, Nataliia Dziubenko, Alexander Zaderko, Sergei Alekseev, Vladimir Lysenko & Valeriy Skryshevsky

DOI: 10.1186/s11671-023-03891-9 - [Open access link on HAL](#)

Revue : Science Direct

Title: “ **Green Synthesis of biocompatible Gd³⁺-doped Ultrasmall Carbon-based Nanohybrids from Coffee Wastes** ”

Authors: Konstantin Paliienko, Anna Topchylo, Sergei Alekseev, Alain G elo en, Yurii Milovanov, Tetiana Lysenko, Valeriy Skryshevsky, Tatiana Borisova, Vladimir Lysenko

DOI: 10.1016/j.crcon.2023.09.001 - [Open access link on Zenodo](#)

C’Nano | The Nanoscience Meeting 2023 in Poitiers

In March 2023, UNAT members actively contributed to the C’Nano-2023 conference with the presentation of 1 oral and 1 poster.

Oral presentation :

Title : “ **Green synthesis of Gd³⁺ -doped ultrasmall carbon-based nanohybrids from coffee wastes** ”

Authors : K. Paliienko, A. Topchylo, S. Alekssev, A. G elo en, Y. Milovanov, T. Lysenko, V. Skryshevsky, T. Borisova and V. Lysenko

→ Access on page 5

Poster :

Title : “ **F orster resonance energy transfer between multicolor fluorescent carbon dots** ”

Authors : Ivan Lysenko, Anna Topchylo, Alexander Zaderko, Alain G elo en, Tetyana Nychporuk, Valeriy Skryshevsky and Vladimir Lysenko

→ Access on page 6

UNAT Implemented secondments

Research and Innovation Staff Exchange (RISE) projects fund short-term exchanges (“secondments”) for staff to develop careers combining scientific excellence with exposure to other countries and sectors. RISE enables more interaction between academia and non-academic organisations within Europe and worldwide.

The following secondments were implemented between April 2023 and November 2023:

LYSENKO Tetiana from SCIENCE PARK to UCBL (01/03/2023 - 07/04/2023)

BORISOVA Tatiana from SCIENCE PARK to UCBL (10/01/2023 - 09/04/2023)

PALIENKO Kostiantyn from SCIENCE PARK to UCBL (16/01/2023 - 15/04/2023)

DZIUBENKO Nataliia from SCIENCE PARK to UCBL (24/04/2023 - 07/06/2023)

KUZNIETSOVA Halyna from SCIENCE PARK to UCBL (24/04/2023 - 07/06/2023)

MANCINI Federica from CNR to GLINCS (16/05/2023 - 13/07/2023)

GANDOLFI Sara from CNR to GLINCS (15/05/2023 - 19/07/2023)

ZADERKO Alexander from SCIENCE PARK to UCBL (06/03/2023 - 28/07/2023)

ADAMIANO Alessio from CNR to BIOEMTECH (08/07/2023 - 07/08/2023)



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