

BRIGANTINE

Chemico-physical and multispectral Data fusion
for Adriatic sea monitoring
by autonomous vessel

A 1.5

Communication campaign about BRIGANTINE' project

Annex

Project Acronym	BRIGANTINE
Project ID Number	ITHR0200237
Project Title	Chemico-physical and multispectral Data fusion for Adriatic sea monitoring by autonomous vessel
Priority Axis	1 - Sustainable growth in the blue economy
Specific Objective	1.1 - Developing and enhancing research and innovation capacities and the uptake of advanced technologies
Work Package Number	1
Work Package Title	Increased number of researchers, PhDstudents, new monitoring tool applied to macrophytes observation
Activity Number	A 1.5
Activity Title	Communication campaign about BRIGANTINE' project
Partner in Charge	PP1
Partners involved	PP2, PP3, PP4, PP5
Authors	Dr. Sabina Susmel, Dr. Anna Annibaldi
Status	Draft
Distribution	Internal
Citation	



PARTICIPANT LIST

D3.4.4 Activity Lab

UniUD Sailing Lab

Organized by University of Udine

Cervignano, 25.02.2025

Italy - Croatia

Brigantine

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8	Luka Inosevic	Malignani Cervignano 4TELA	Luka Inosevic	☐ Yes ☒ No
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10	Valentino Raulic	Malignani Cervignano 4TELA	Valentino Raulic	☐ Yes ☒ No
11	Filippo Buccino	Malignani Cervignano 4TELA	Filippo Buccino	☐ Yes ☒ No
12	Francesco Pontee	Malignani Cervignano 4TELA	Francesco Pontee	☐ Yes ☒ No
13	Samuele Caimi Assenti	Malignani Cervignano 4TELA	Samuele Caimi	☐ Yes ☒ No
14	Gianfiliberto Pagnolo	Malignani Cervignano 4TELA	Gianfiliberto Pagnolo	☐ Yes ☒ No
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23	Giorgia Basile	Liceo Albert Einstein 3LSAA	Giorgia Basile	☐ Yes ☒ No
24	Caterina Bertoni	Liceo Albert Einstein 3LSAA	Caterina Bertoni	☐ Yes ☒ No
25	Gabriele Benvegno	Liceo Albert Einstein 3LSAA	Gabriele Benvegno	☐ Yes ☒ No
26	Eleonora Molin	Liceo Albert Einstein 3LSAA	Eleonora Molin	☐ Yes ☒ No
27	Alessio Gini	Liceo Albert Einstein 3LSAA	Alessio Gini	☐ Yes ☒ No
28	Rossella Grillo	Liceo Albert Einstein 3LSAA	Rossella Grillo	☐ Yes ☒ No
29	Khadijatou Ndiaye	Liceo Albert Einstein 3LSAA	Khadijatou Ndiaye	☐ Yes ☒ No
30	Pilot Lucz	Liceo Albert Einstein 3LSAA	Pilot Lucz	☐ Yes ☒ No
31	Pietro Busetto	Liceo Einstein 3LSAA	Pietro Busetto	☒ Yes ☒ No
32	Carlo Coronica	Liceo Einstein 3LSAA	Carlo Coronica	☐ Yes ☒ No
33	Federico Minin	Liceo A. Einstein 3LSAA	Federico Minin	☒ Yes ☒ No
34	Antonio Futia	Liceo A. Einstein 3LSAA	Futia	☐ Yes ☒ No



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49	Antonio Jaine	IST Arturo Malignani "Cervignano" 4° TELB	Antonio Jaine	☐ Yes ☒ No
50				☐ Yes ☐ No

Italy – Croatia



Abstract

This activity lab has been organized in the scope of the PLS (Programma Lauree Scientifiche, i.e., Science Degree Program) initiative “Le scienze della vela” (i.e., “The sciences of sailing”) of the Department of Mathematics, Computer Science, and Physics (DMIF) of the University of Udine. The initiative aims to introduce students of high schools to the mathematical, physical and technological basics of sailing, and to the possible applications of a sailing vessel, including the monitoring of sea. In particular, one lesson has been devoted to the technological details of the monitoring of sea by means of autonomous vehicles (deployed from a sailing vessel), and, in particular, to the BRIGANTINE project.

BRIGANTINE

Chemico-physical and multispectral Data fusion
for Adriatic sea monitoring
by autonomous vessel

D3.4.4 Analytical Lab Activity Report

Italy – Croatia



Project Acronym	BRIGANTINE
Project ID Number	ITHR0200237
Project Title	Chemico-physical and multispectral Data fusion for Adriatic sea monitoring by autonomous vessel
Priority Axis	1 - Sustainable growth in the blue economy
Specific Objective	1.1 - Developing and enhancing research and innovation capacities and the uptake of advanced technologies
Work Package Number	WP3
Work Package Title	Knowledge for monitoring and to support the technology transfer
Activity Number	3.4
Activity Title	Communication
Partner in Charge	PP1
Partners involved	PP2
Authors	Sabina Susmel
Status	Final
Distribution	Internal/Stakeholders/Web
Citation	

Italy – Croatia



CONTENTS

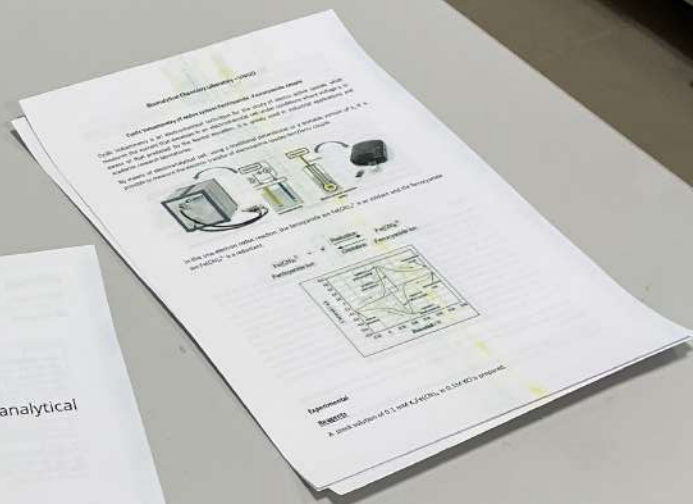
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Italy – Croatia



Summary

Technology transfer requires personnel with a high level of expertise and diverse skills. During this one-day laboratory activity, master's degree students are invited to explore the operation of equipment used to develop electroanalytical sensors and devices for field measurements. The activity is structured using an active learning approach, where students first engage with two thematic research papers, prepare a presentation for their classmates (flipped classroom model), and then test the equipment described in their presentation. The goals of Brigantine project were introduced and few gadgets were offered to the attendants.



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D3.4.4 Lab Activity at the Bioanalytical Lab

Organized by UniUD

Udine, 10/12/2024

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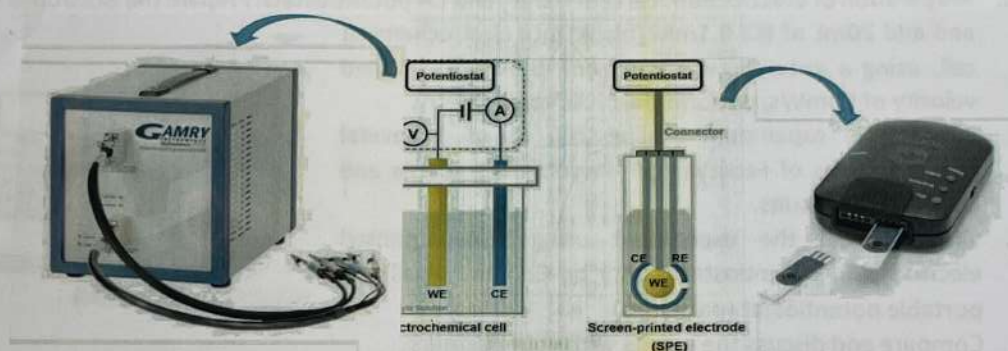
If checked "Yes", you confirm that you're at least 18 yrs. old and consents that your contact details may be used for the sole purpose of organization and quality evaluation of the activities within the BRIGANTINE project. You also consent that you may be recorded on photographs, video or audio recording at the event.

N°	Name and Surname	E-mail	Signature	Privacy *
1	GABRIEL SELENATI		<i>Gabriel Selenati</i>	☐ Yes ☐ No
2	De Lion Alice		<i>Alice De Lion</i>	☐ Yes ☐ No
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4	PATRICK GANZINI		<i>Patrick Ganzini</i>	☐ Yes ☐ No
5	CHIARA CERUESATO		<i>Chiara Ceruesato</i>	☒ Yes ☐ No
6	Serena Del Giudice		<i>Serena</i>	☒ Yes ☐ No
7	GIACOMO TENECARZI		<i>Giacomo Tenecarzi</i>	☒ Yes ☐ No
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9	SACCARINO MICHAELA		<i>Michela Saccarino</i>	☒ Yes ☐ No
10	PRESOTTO SARA		<i>Sara Presotto</i>	☐ Yes ☐ No
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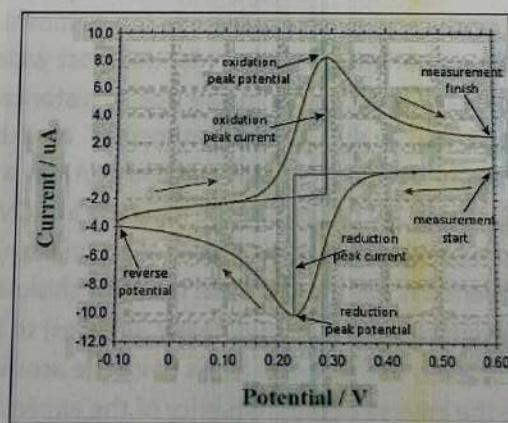
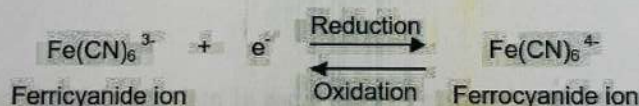
Cyclic Voltammetry of redox system Ferricyanide -Ferrocyanide couple

Cyclic Voltammetry is an electrochemical technique for the study of electro-active species which measures the current that develops in an electrochemical cell under conditions where voltage is in excess of that predicted by the Nernst equation. It is widely used in industrial applications and academic research laboratories.

By means of electroanalytical cell, using a traditional potentiostat or a portable version of it, it is possible to measure the electron transfer of electroactive species ferri/ferro couple.



In this one-electron redox reaction, the ferricyanide ion $\text{Fe}(\text{CN})_6^{3-}$ is an oxidant and the ferrocyanide ion $\text{Fe}(\text{CN})_6^{4-}$ is a reductant.



Experimental

Reagents

A stock solution of 0.1 mM $\text{K}_3\text{Fe}(\text{CN})_6$ in 0.1M KCl is prepared.

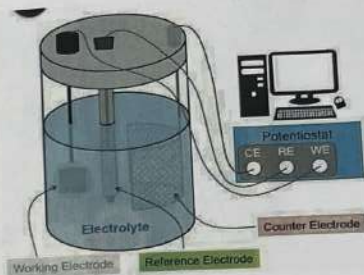
Apparatus

In this experiment conventional and portable potentiostats will be used (CH, Gamry 3000 and Palmsens).

Electrodes:

- A. Working electrode: Glassy carbon, Gold, plastics graphite electrodes, graphite ink
- B. Reference electrode: silver/silver chloride reference electrode (Ag/AgCl)
- C. Counter electrode: Steel bar, graphite bar, and graphite ink.

1. **Preparation of electrochemical cell: Gamry and CH potentiostats:** Prepare the electrodes set and add 20mL of KCl 0.1mM (blank) into electrochemical cell, using a potential window from -0.3V to 0.8 V and velocity of 50mV/s, perform the cyclic voltammetry.
2. Repeat the experiment adding 200 μ L of 3 several concentrations of Ferricyanide -Ferrocyanide couple and compare the results.
3. Finally, repeat the experiment using screen printed electrodes in potentiostat Gamry or CH, and small and portable potentiostat (palmsens).
4. Compare and discuss the results with your partners.



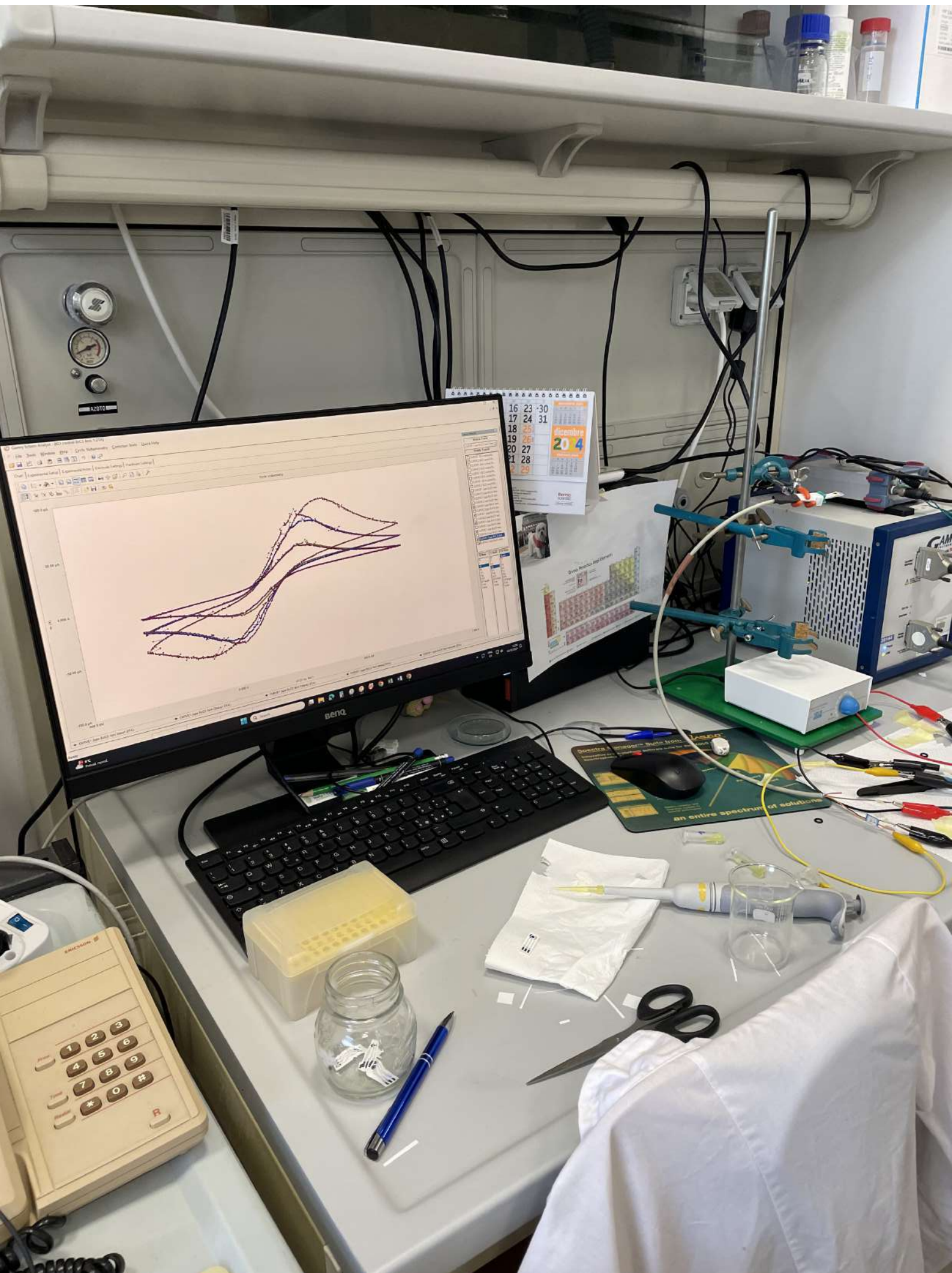
eQCM

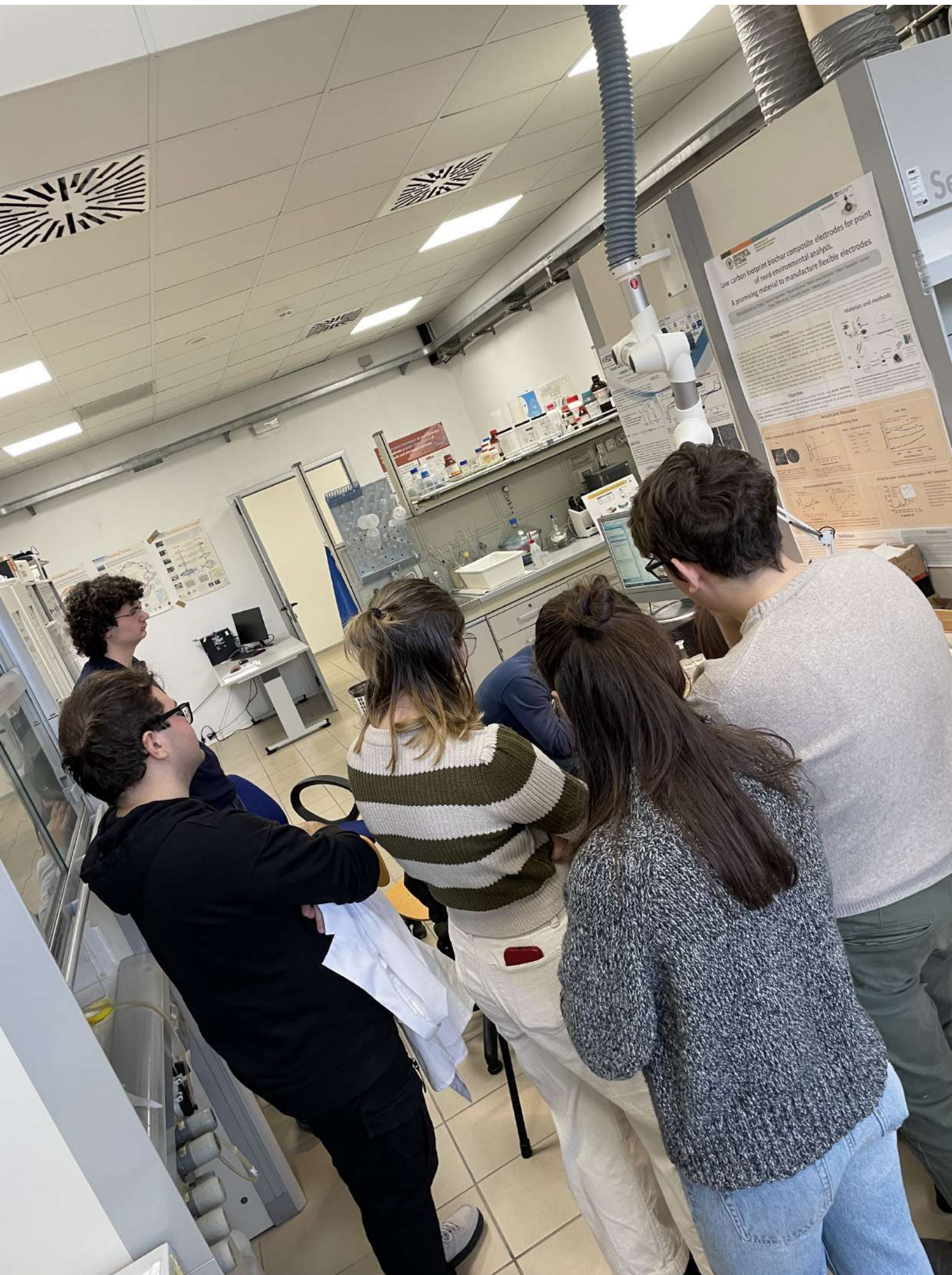
The application of a mechanical strain to certain types of materials (mostly crystals) results in the generation of an electrical potential across that material. Conversely, the application of a potential to the same material results in a mechanical strain – a deformation. Removal of the potential allows the crystal to restore to its original orientation. Quartz is by far the most widely utilized material for the development of instruments containing oscillators: partly due to historical reasons (the first crystals were harvested naturally), and partly due to its commercial availability (synthetically grown nowadays). There are many ways to cut quartz crystal and each cut has a different vibrational mode upon application of a potential. The AT-cut has gained the most use in QCM applications due to its low temperature coefficient at room temperature. This means that small changes in temperature only result in small changes in frequency. It has a vibrational mode of thickness shear deformation. The application of an alternating potential (a sine wave in nearly all cases) to the crystal faces causes the crystal to oscillate. When the thickness of the crystal (t_q) is twice the acoustical wavelength, a standing wave can be established where the inverse of the frequency of the applied potential is $\frac{1}{2}$ of the period of the standing wave. This frequency is called the resonant frequency, f_0 .

Mass changes on the surface of the electrode will result in frequency changes. When a deposited film is thin and rigid, the decrease in frequency can be directly correlated to the increase in mass using the Sauerbrey.

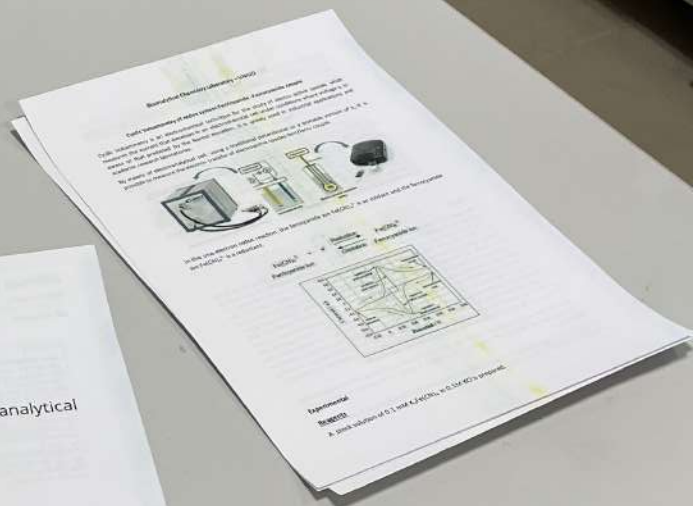
The QCM cell is assembled and the signal variation (is frequency and mass) is shown in relation with the varied mass at the crystal surface.

In eQCM, it is possible to apply the classical potential wave-forms to have both electrical and gravimetric monitored. The piezoelectric crystal is the WE, CA and RE are connected to complete the electrochemical cell.









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D3.4.4 Lab Activity at the Bioanalytical Lab

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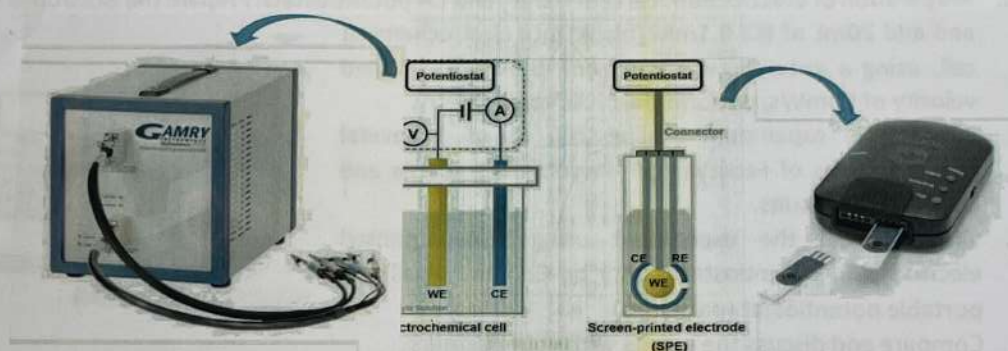
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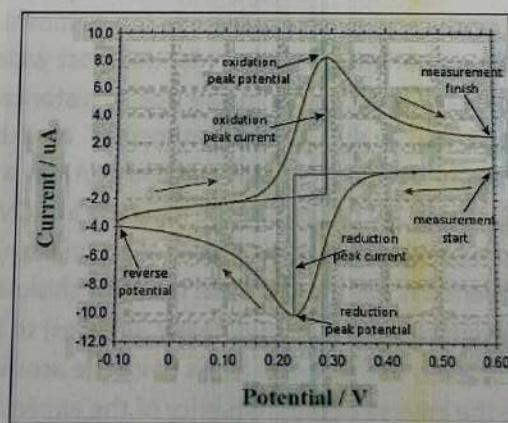
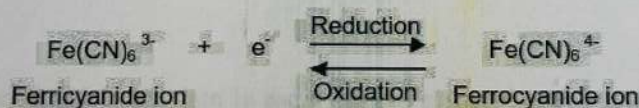
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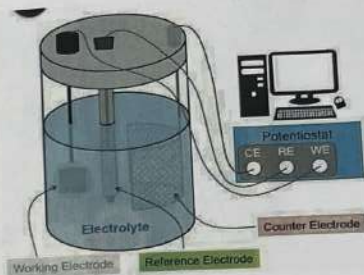
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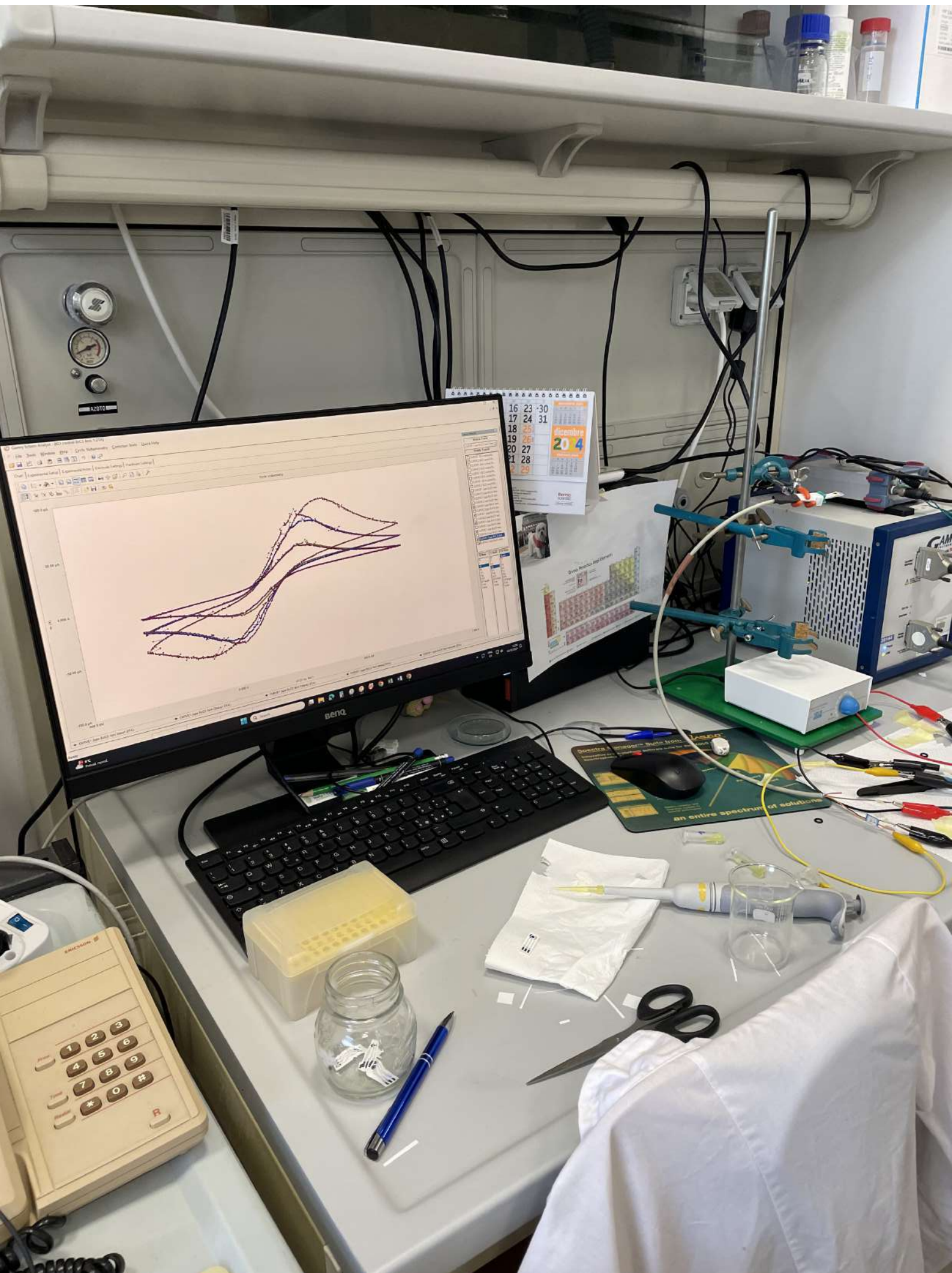
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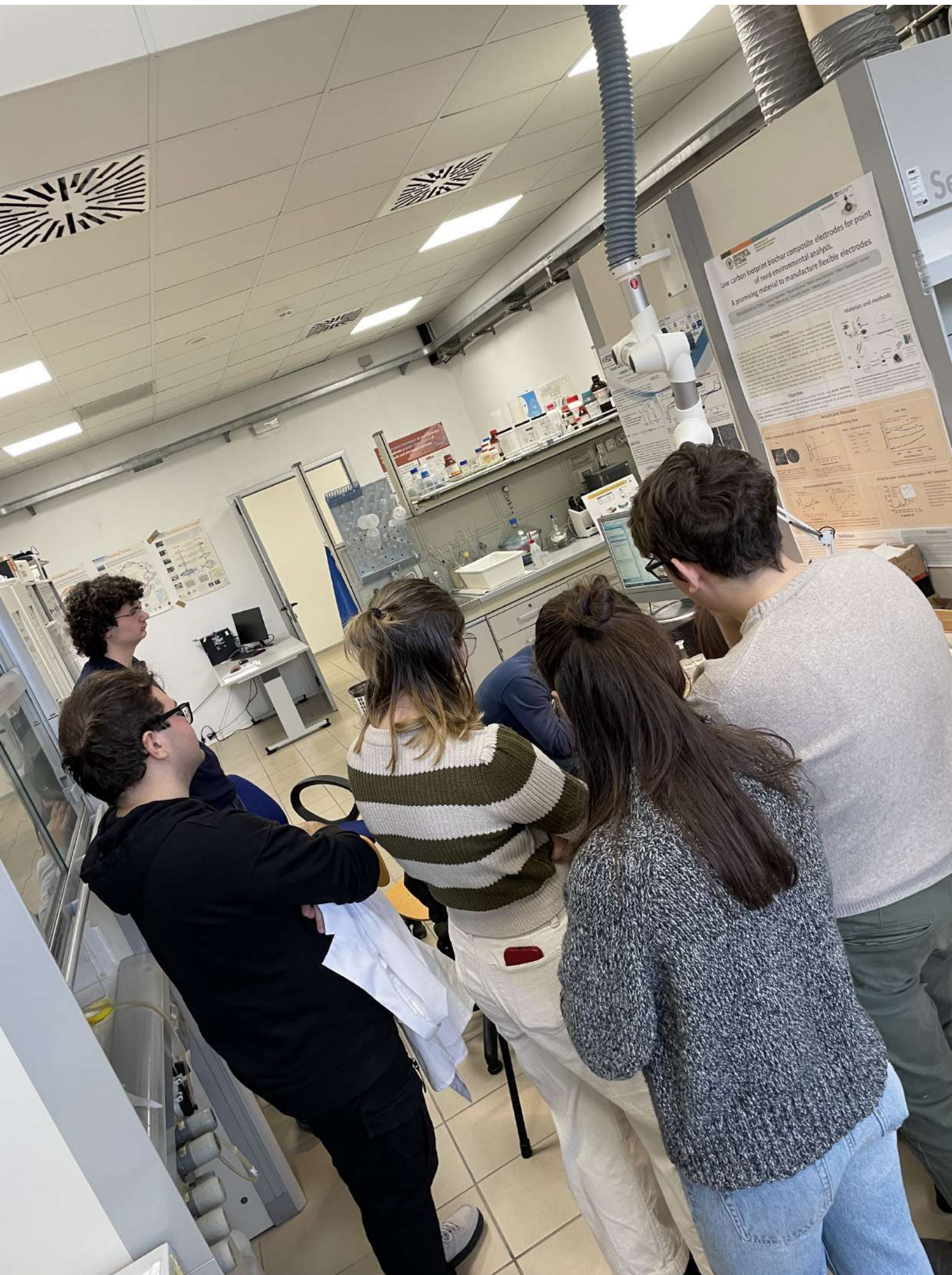
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D3.4.4 Activity Lab

UniUD Sailing Lab

Organized by University of Udine

Monfalcone, 28.01.2025

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4	EMMA CASTELLAN	ISIS M. BUONARROTI 4ASA	<i>Emma Castellani</i>	☐ X Yes No
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6	PIETRO CARMONATE	ISIS M. BUONARROTI 4ASA	<i>Pietro Carmonate</i>	☐ X Yes No
7	FEDERICO NICOSIA	ISIS M. BUONARROTI 4ASA	<i>Federico Nicosia</i>	☐ X Yes No
8	RICORDO D'AMUS	ISIS M. BUONARROTI 4ASA	<i>Ricordo D'amus</i>	☐ X Yes No
9	GIORGIO BERSA	ISIS BUONARROTI/4ASA	<i>Giorgio Bersa</i>	☐ X Yes No
10	ALEX CRAGNOLIN	ISIS M. BUONARROTI 4ASA	<i>Alex Cragolin</i>	☐ X Yes No
11	DANIELE BIANDELLI	ISIS M. BUONARROTI 4ASA	<i>Daniele Biondelli</i>	☐ X Yes No
12	MATTIA DI GIOVANNI	ISIS M. BUONARROTI 4ASA	<i>Mattia Di Giovanni</i>	☐ X Yes No
13	Marco Marlin	ISIS M. BUONARROTI 4ASA	<i>Marco Marlin</i>	☐ X Yes No
14	Margherita Falcomer	ISIS M. BUONARROTI 4ASA	<i>Margherita Falcomer</i>	☐ X Yes No
15	Roberto D'Amico	ISIS M. BUONARROTI 4ASA	<i>Roberto D'Amico</i>	☐ X Yes No
16	Roberto D'Amico	ISIS M. BUONARROTI 4ASA	<i>Roberto D'Amico</i>	☐ X Yes No
17	Alfredo Delia	ISIS M. BUONARROTI 4ASA	<i>Alfredo Delia</i>	☐ X Yes No



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19	REBECCA SALVIATO	ISIS M. BUONARROTI 4 ASA	Rebecca Salviato	☐ Yes ☒ No
20	IRENE ACOSTINI	ISIS M. BUONARROTI 4 ASA	Irene Acostini	☐ Yes ☒ No
21	ANNA PELLIZZONI	ISIS M. BUONARROTI 4 BLS	Anna Pellizzoni	☐ Yes ☒ No
22	SILVIA PICK	ISIS M. BUONARROTI 4 BLS	Silvia Pick	☐ Yes ☒ No
23	LISA SOMMA	ISIS M. BUONARROTI 4 BLS	Lisa Somma	☐ Yes ☒ No
24	ELISA GARLATTI	ISIS M. BUONARROTI 4 BLS	Elisa Garlatti	☐ Yes ☒ No
25	DESIRE SAVY	ISIS M. BUONARROTI 4 ALS	Desire Savy	☐ Yes ☒ No
26	FABIO MANGANIELLO	ISIS M. BUONARROTI 4 ALS	Fabio Manganiello	☐ Yes ☒ No
27	ARES VINTI	ISIS M. BUONARROTI 4 BLS	Ares Vinti	☐ Yes ☒ No
28	Alice Strudel	ISIS M. BUONARROTI 4 ALS	Alice Strudel	☐ Yes ☒ No
29	Alexia Chouamo	ISIS M. BUONARROTI 4 ALS	Alexia Chouamo	☐ Yes ☒ No
30	Salma Zehraoui	ISIS M. BUONARROTI 4 ALS	Salma Zehraoui	☐ Yes ☒ No
31	Louise Bouchard	ISIS M. BUONARROTI 4 ALS	Louise B.	☐ Yes ☒ No
32	ADELE RESOLI	ISIS M. BUONARROTI 4 ALS	Adele Resoli	☐ Yes ☒ No
33	UMBERTO DIMITRI	ISIS M. BUONARROTI 4 ALS	Umberto Dimitri	☐ Yes ☒ No
34	LORENZO MOREA	ISIS M. BUONARROTI 4 BLS	Lorenzo Morea	☐ Yes ☒ No



Italy - Croatia

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N°	Name and Surname	School name/class	Signature	Privacy *
35	ALESSANDRO VERZEGNAX	ISIS BUONARROTI 4ALS	<i>Alex</i>	☐ Yes ☒ No
36	VALENTINA ARDOLINO	ISIS M. BUONARROTI 4ALS	<i>Valentina Ardolino</i>	☐ Yes ☒ No
37	SABRINA BOUATIT	ISIS M. BUONARROTI 4ALS	<i>Sabrina Bouatit</i>	☐ Yes ☒ No
38	DORA FONTANOT	ISIS M. BUONARROTI 4ALS	<i>Dora Fontanot</i>	☐ Yes ☒ No
39	ALAM MEHJABIN	ISIS M. BUONARROTI 4ALS	<i>Nelyah Alam</i>	☐ Yes ☒ No
40	ELENA ZORAT	ISIS M. BUONARROTI 4BLS	<i>Elena Zorat</i>	☐ Yes ☒ No
41	ELISABETH HÖLLER	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Elisabeth Höller</i>	☐ Yes ☒ No
42	GIULIA PERILLO	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Giulia Perillo</i>	☐ Yes ☒ No
43	N'OLE FRELIANT	ISIS MICHELANGELO BUONARROTI 4BLS	<i>N'ole Freliant</i>	☐ Yes ☒ No
44	SARAH SIMONIT	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Sarah Simonit</i>	☐ Yes ☒ No
45	ALEXIA VIOLO	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Alexia Viola</i>	☐ Yes ☒ No
46	Emanuele Saccomani	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Emanuele Saccomani</i>	☐ Yes ☒ No
47	Tommaso Francalini	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Tommaso Francalini</i>	☐ Yes ☒ No
48	Victoria Jurkovic	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Victoria Jurkovic</i>	☐ Yes ☒ No
49	SANTICKAIA IANA	ISIS MICHELANGELO BUONARROTI 4BLS	<i>Santickaia Iana</i>	☐ Yes ☒ No
50				☐ Yes ☐ No

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Abstract

This activity lab has been organized in the scope of the PLS (Programma Lauree Scientifiche, i.e., Science Degree Program) initiative "Le scienze della vela" (i.e., "The sciences of sailing") of the Department of Mathematics, Computer Science, and Physics (DMIF) of the University of Udine. The initiative aims to introduce students of high schools to the mathematical, physical and technological basics of sailing, and to the possible applications of a sailing vessel, including the monitoring of sea. In particular, at the Michelangelo Buonarroti Lyceum of Monfalcone, one lesson has been devoted to the technological details of the monitoring of sea by means of autonomous vehicles (deployed from a sailing vessel), and, in particular, to the BRIGANTINE project.

PARTICIPANT LIST

D2.5.2 Activity 1.5

Awareness campaign on the protection
and conservation of high value seaweeds
and seagrass meadows habitats

Organized by Polytechnic University of Marche

Ancona, 4 March 2025

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N°	Name and Surname	E-mail	Signature	Privacy *
1	GAIA BABINI			☐ Yes ☐ No
2	SOFIA MAZZOCCHI			☐ Yes ☐ No
3	JULIA ABRICAPINTEA			☐ Yes ☐ No
4	MARTINA FORCONI			☐ Yes ☐ No
5	MAURIZIO STAFFOLINI			☐ Yes ☐ No
6	LORENZO PATICA			☐ Yes ☐ No
7	SERENA PIETROTONARO			☐ Yes ☐ No
8	VITTORIA GIGLI			☐ Yes ☐ No
9	GIULIA COACCI			☐ Yes ☐ No
10	ERIKA ŽEKIĆ			☐ Yes ☐ No
11	LISA BRATTI			☐ Yes ☐ No
12	ULRIKE BOLDRINI			☐ Yes ☐ No
13	ALICE AGOSTINELLI			☐ Yes ☐ No
14				☐ Yes ☐ No
15				☐ Yes ☐ No
16				☐ Yes ☐ No
17				☐ Yes ☐ No

PARTICIPANT LIST

D2.5.2 Activity 1.5

Awareness campaign on the protection
and conservation of high value seaweeds
and seagrass meadows habitats

Organized by Polytechnic University of Marche

Ancona, 12 February 2025

Italy - Croatia



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N°	Name and Surname	E-mail	Signature	Privacy *
1	Michele Totti		Michele Totti	☐ Yes ☐ No
2	Giacomo Pacconi		Giaco Pacconi	☐ Yes ☐ No
3	GABRIELE SABBATINI		Gabriele Sabbatini	☐ Yes ☐ No
4	CHIARA MORDINI		Chiara Mordini	☐ Yes ☐ No
5	Flupio Dinaccio		Flupio Dinaccio	☐ Yes ☐ No
6	Stefano Recchi		Stefano Recchi	☐ Yes ☐ No
7	ETTORE GIOLIT		Ettore Giolit	☐ Yes ☐ No
8	GIANO RISITANO		Gian Risitano	☐ Yes ☐ No
9	Andrea Carracani		Andrea Carracani	☐ Yes ☐ No
10	LIVIA MARIA PADRANO		Livia Maria Padrano	☐ Yes ☐ No
11	TOMMASO MICHELI		Tommaso Micheli	☐ Yes ☐ No
12	KISS-TOTH PAUL		Kiss-Toth Paul	☐ Yes ☐ No
13	DAVIDE CHIATTI		Davide Chiatti	☐ Yes ☐ No
14	GABRIELE MOSSINI		Gabriele Mossini	☐ Yes ☐ No
15	RATTIELLO CHIARDINI		Rattello Chiardini	☐ Yes ☐ No
16				☐ Yes ☐ No
17				☐ Yes ☐ No

Italy – Croatia

 **Brigantine**

N°	Name and Surname	E-mail	Signature	Privacy *
35				☐ Yes ☐ No
36				☐ Yes ☐ No
37				☐ Yes ☐ No
38				☐ Yes ☐ No
39				☐ Yes ☐ No
40				☐ Yes ☐ No

PARTICIPANT LIST

D2.5.2 Activity 1.5

Awareness campaign on the protection
and conservation of high value seaweeds
and seagrass meadows habitats

Organized by Polytechnic University of Marche

Ancona, 6 February 2025

N°	Name and Surname	E-mail	Signature	Privacy *
1	Federico Gatti		<i>Federico Gatti</i>	☐ Yes ☒ No
2	SARA NICOLINI		<i>Sara Nicolini</i>	☐ Yes ☒ No
3	ANGELICA MARTINI		<i>Angelica Martini</i>	☐ Yes ☒ No
4	Christian Tricoli		<i>Christian Tricoli</i>	☐ Yes ☒ No
5	ANDREA PACINOTTI		<i>Andrea Pacinotti</i>	☐ Yes ☒ No
6	SOFIA TERRE'		<i>Sofia Terra</i>	☐ Yes ☒ No
7	MATTEO BOLETTA		<i>Matteo Boletta</i>	☐ Yes ☒ No
8	SORLA WICCHETTI		<i>Sorla Wicchetti</i>	☐ Yes ☒ No
9	STEFANO NOVELLO		<i>Stefano Novello</i>	☐ Yes ☒ No
10	JACOPO RECCHI		<i>Jacopo Recchi</i>	☐ Yes ☒ No
11	DAVIDE GIACOBELLI		<i> Davide Giacobelli</i>	☐ Yes ☒ No
12	MICCO' DIMADIO		<i>Micco' Dimadio</i>	☐ Yes ☒ No
13	ANDREA COPPARI		<i>Andrea Coppari</i>	☐ Yes ☒ No
14	MATTEO PUCCIARELLI		<i>Matteo Pucciarelli</i>	☐ Yes ☒ No
15	LIAM RAPHAEL MAJECKI		<i>Liam Raphael Majewski</i>	☐ Yes ☒ No
16	TOMMASO GALASSI		<i>Tommaso Galassi</i>	☐ Yes ☒ No
17	LEONARDO BUCCI		<i>Leonardo Bucci</i>	☐ Yes ☒ No

PARTICIPANT LIST

D2.5.2 Activity 1.5

Awareness campaign on the protection
and conservation of high value seaweeds
and seagrass meadows habitats

Organized by Polytechnic University of Marche

Ancona, 6 February 2025

N°	Name and Surname	E-mail	Signature	Privacy *
1	Federico Gatti		<i>Federico Gatti</i>	☐ Yes ☒ No
2	SARA NICOLINI		<i>Sara Nicolini</i>	☐ Yes ☒ No
3	ANGELICA MARTINI		<i>Angelica Martini</i>	☐ Yes ☒ No
4	Christian Tricoli		<i>Christian Tricoli</i>	☐ Yes ☒ No
5	ANDREA PACINOTTI		<i>Andrea Pacinotti</i>	☐ Yes ☒ No
6	SOFIA TERRE'		<i>Sofia Terra</i>	☐ Yes ☒ No
7	MATTEO BOLETTA		<i>Matteo Boletta</i>	☐ Yes ☒ No
8	SORLA WICCHETTI		<i>Sorla Wicchetti</i>	☐ Yes ☒ No
9	STEFANO NOVELLO		<i>Stefano Novello</i>	☐ Yes ☒ No
10	JACOPO RECCHI		<i>Jacopo Recchi</i>	☐ Yes ☒ No
11	DAVIDE GIACOBELLI		<i> Davide Giacobelli</i>	☐ Yes ☒ No
12	MICCO' DIMADIO		<i>Micco' Di Madio</i>	☐ Yes ☒ No
13	ANDREA COPPARI		<i>Andrea Coppari</i>	☐ Yes ☒ No
14	MATTEO PUCCIARELLI		<i>Matteo Pucciarelli</i>	☐ Yes ☒ No
15	LIAM RAPHAEL MAJECKI		<i>Liam Raphael Majewski</i>	☐ Yes ☒ No
16	TOMMASO GALASSI		<i>Tommaso Galassi</i>	☐ Yes ☒ No
17	LEONARDO BUCCI		<i>Leonardo Bucci</i>	☐ Yes ☒ No

PARTICIPANT LIST

D2.5.2 Activity 1.5

Awareness campaign on the protection
and conservation of high value seaweeds
and seagrass meadows habitats

Organized by Politechnic University of Marche

Ancona, 22 January 2025

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N°	Name and Surname	E-mail	Signature	Privacy *
1	BONARELLI ALESSANDRO		Alessandro Bonarelli	☐ Yes ☒ No
2	CABALLERO MATOS ASIA GINEVRA		Asia Caballero	☐ Yes ☒ No
3	CAPICCIOTTI LUDOVICA		Ludovica Capicciotti	☐ Yes ☒ No
4	CATALANO PIETRO		Pietro Catalano	☐ Yes ☒ No
5	CECCHI ELENA		Elena Cecchi	☐ Yes ☒ No
6	DE FÉLICE GIACOMO		Già como de Felice	☐ Yes ☒ No
7	DI ALESSANDRO NICCOLÒ ANTONIO		Niccolò Di Alessandro	☐ Yes ☒ No
8	FIANCHINI SAMORY TOMMASO		Tommaso Fianchini	☐ Yes ☒ No
9	FRANCA ALESSIO		Alessio Franca	☐ Yes ☒ No
10	GUSELLA EMMA		Emma Gusella	☐ Yes ☒ No
11	LATILLA FRANCESCO		Francesco Latilla	☐ Yes ☒ No
12	MARTELLA NICOLE		Nicole Martella	☐ Yes ☒ No
13	PAOLINI AMBRA		Ambra Paolini	☐ Yes ☒ No
14	POLIDORI IGOR		Igor Polidori	☐ Yes ☒ No
15	PUCCIARELLI LINDA		Linda Pucciarelli	☐ Yes ☒ No
16	RAMANI BONOCORI LEONARDO		Leonardo Ramani Bonocori	☐ Yes ☒ No
17	SLOBODIAN VIKTOR		Viktor Slobodan	☐ Yes ☒ No

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N°	Name and Surname	E-mail	Signature	Privacy *
18	PROF.SSA CERQUETELA ANNAMARIA	annamaria.cerquetello @salvabenedicasso.it	<i>Annamaria Cerquetello</i>	☒ Yes ☐ No
19				☐ Yes ☐ No
20				☐ Yes ☐ No
21				☐ Yes ☐ No
22				☐ Yes ☐ No
23				☐ Yes ☐ No
24				☐ Yes ☐ No
25				☐ Yes ☐ No
26				☐ Yes ☐ No
27				☐ Yes ☐ No
28				☐ Yes ☐ No
29				☐ Yes ☐ No
30				☐ Yes ☐ No
31				☐ Yes ☐ No
32				☐ Yes ☐ No
33				☐ Yes ☐ No
34				☐ Yes ☐ No

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D2.5.2 Educational activities

Organized by Ruđer Bošković Institute

Center for Marine Research
Rovinj (Croatia), 14.11.2024

Italy - Croatia

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N°	Name and Surname	E-mail	Signature	Privacy *
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2	Alen Mates	alen.mates@gmail.com	Alen Mates	☐ Yes ☐ No
3	Vid Babić	vidbabic2010@gmail.com	Vid Babić	☐ Yes ☐ No
4	Igor Bertoša	igor.bertoša@stole.hr	Igor Bertoša	☐ Yes ☐ No
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6	Filip Peršurić Bernubić	Filip.peršurić-bernbic@stole.hr	Filip Peršurić Bernubić	☐ Yes ☐ No
7	Manija Šimunović	supermanija0403@gmail.com	Manija Šimunović	☐ Yes ☐ No
8	Laura Šolar	laura.solar2008@gmail.com	Laura Šolar	☐ Yes ☐ No
9				☐ Yes ☐ No
10				☐ Yes ☐ No
11				☐ Yes ☐ No
12				☐ Yes ☐ No
13				☐ Yes ☐ No
14				☐ Yes ☐ No
15				☐ Yes ☐ No
16				☐ Yes ☐ No
17				☐ Yes ☐ No

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D2.5.2 Educational activities

Organized by Ruđer Bošković Institute

Center for Marine Research
Rovinj (Croatia), 14.11.2024

Italy - Croatia

Brigantine

N°	Name and Surname	E-mail	Signature	Privacy *
1	Karlo Šimić	karlo-simic10@stole.hr	Karlo Šimić	☐ Yes ☐ No
2	Alen Mates	alen.mates@gmail.com	Alen Mates	☐ Yes ☐ No
3	Vid Babić	vidbabic2010@gmail.com	Vid Babić	☐ Yes ☐ No
4	Igor Bertoša	igor.bertoša@stole.hr	Igor Bertoša	☐ Yes ☐ No
5	LEAN PILAR	LEAN.PILAR@GMAIL.COM	Lean Pilar	☐ Yes ☐ No
6	Filip Peršurić Bernubić	Filip.peršurić-bernbic@stole.hr	Filip Peršurić Bernubić	☐ Yes ☐ No
7	Manija Šimunović	supermanija0403@gmail.com	Manija Šimunović	☐ Yes ☐ No
8	Laura Šolar	laura.solar2008@gmail.com	Laura Šolar	☐ Yes ☐ No
9				☐ Yes ☐ No
10				☐ Yes ☐ No
11				☐ Yes ☐ No
12				☐ Yes ☐ No
13				☐ Yes ☐ No
14				☐ Yes ☐ No
15				☐ Yes ☐ No
16				☐ Yes ☐ No
17				☐ Yes ☐ No

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D2.5.2 Educational activities

Organized by Ruđer Bošković Institute

Center for Marine Research
Rovinj (Croatia), 9.10.2024

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Italy - Croatia

Brigantine

N°	Name and Surname	E-mail	Signature	Privacy *
1	Ana Crnogaj	ana.crno@icloud.com	Ana Crnogaj	☐ Yes ☒ No
2	Nika Leuković	nika.leukovic@gmail.com	Nika Leuković	☐ Yes ☒ No
3	Lara Furtek	lara20080701@gmail.com	Lara Furtek	☐ Yes ☒ No
4	Vedran Mandetko	vedran.mandjetko@gmail.com	Vedran Mandetko	☐ Yes ☒ No
5	Anika Petek	anika.petek@gmail.com	Anika Petek	☐ Yes ☒ No
6	Marija Željuna Kustura	marijakustura5@gmail.com	Marija Ž. Kustura	☐ Yes ☒ No
7	IVAN PATAČIĆ	ivan.potancic@skole.hr	Ivan Patačić	☒ Yes ☒ No
8	MARIJANA ŽGELA PUTNIKOVIĆ	mzcela@gmail.com	M. Žgela	☒ Yes ☐ No
9	SANJA VORIĆ	vorih.vgimn@gmail.com	Sanja Vorih	☒ Yes ☒ No
10	MARIJA MARGETIĆ	totokame123@gmail.com	Marija Margetić	☐ Yes ☒ No
11	KARLO VIZEC	karlo.vizec@skole.hr	Karlo Vizec	☐ Yes ☒ No
12	Helena Furčić	hfurcic@gmail.com	Helena Furčić	☐ Yes ☒ No
13	IVANA MARTINIĆ	martinic.iv@gmail.com	Ivana Martinic	☒ Yes ☐ No
14	ZRINKA PONGIĆ STANIĆ	zrinkaprs@gmail.com	Zrinka Pongić	☒ Yes ☐ No
15	MILENA ČULAV MARKIČENIĆ	milena.culav@skole.hr	Milena Čulav	☒ Yes ☐ No
16	JURAJ BALJINT	juraj.baljint@gmail.com	Juraj Baljint	☒ Yes ☐ No
17	Fran Čeljski	fran.cesljask@outlook.com	Fran Čeljski	☒ Yes ☐ No

Italy – Croatia

Brigantine

N°	Name and Surname	E-mail	Signature	Privacy *
18	Nela Kasprić	kasprić.nela@gmail.com	<i>Nela Kasprić</i>	☐ Yes ☒ No
19	Jelena Šimić	jelena.simic1911@gmail.com	Jelena Šimić	☐ Yes ☒ No
20	Dita Kristafor	dita.kristafor@gmail.com	Dita Kristafor	☐ Yes ☒ No
21	Lara Jakić	lara.jakic6@gmail.com	Lara Jakić	☐ Yes ☒ No
22	MARKO ŠARIĆ	marko@dujave.com	<i>Marko Šarić</i>	☒ Yes ☐ No
23	LANA TOMIĆ	lanatomic242@gmail.com	Lana Tomić	☒ Yes ☐ No
24	DORA TODIĆ	todiedora@gmail.com	Dora Todić	☐ Yes ☒ No
25	Toma Vasarević	toma.vasarevic@gmail.com	Toma Vasarević	☒ Yes ☐ No
26				☐ Yes ☐ No
27				☐ Yes ☐ No
28				☐ Yes ☐ No
29				☐ Yes ☐ No
30				☐ Yes ☐ No
31				☐ Yes ☐ No
32				☐ Yes ☐ No
33				☐ Yes ☐ No
34				☐ Yes ☐ No
	Name and Surname	E-mail	Signature	

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A decorative graphic element consisting of a green and blue wave-like shape with a white outline, positioned at the top left of the page.

INTERREG ITALY-CROATIA PROGRAMME 2021 – 2027

Event follow up report (Annex 1)

Italy – Croatia

Brigantine

Work Package number and name	Work package 2
Activity number and name	Activity 2.4 Dissemination-Goal: dissemination of the project's to different target audiences, both professionals and general public
Deliverable number and name	<i>D.2.4.3 Educational activities</i>

Project Partner	<i>PP - Institut Ruđer Bošković (Rudjer Boskovic Institute)</i>
Event name	Crofish – International Fisheries Fair Crofish, the Fisheries, Fishing Equipment, Aquaculture and Sport Fishing Fair in Poreč is the only event of its kind held in Croatia. https://www.crofish.eu/hr/o-sajmu/program-dogadjanja/
Date	22.-24.11.2024.
Event type	External event financed from BRIGANTINE and ALIENA Interreg project on which presentation of the projects was done on 22.11.2024 from 17.45-18.15. https://www.crofish.eu/en/
Event venue	In presence – Dvorana Žatika, Poreč
Description of the event	The aim of the fair is to enable the gathering and presentation of all interested economic entities operating in fisheries, aquaculture, sport fishing and water sports in Croatia and neighboring countries in one place, in an atmosphere of international and inter-regional cooperation as an important factor in the development of marine fisheries and mariculture. Chamber of Trades and Crafts of Istria County, as a specialized non-profit association, makes great efforts in advising, promoting and developing all small businesses, particularly in trades where fisheries are extremely well represented and have a significant economic role. During the Fair, a series of side events will be held which will include public discussions, expert lectures and meetings of partners – fishermen.



Italy – Croatia

Brigantine

	There are also activities planned to bring fishery products closer to the hospitality sector and public spending in schools and kindergartens. The fair aims to strengthen the position of fishery products in the local diet, improve regulation of the fishery market, develop fishing infrastructure, improve business cooperation and access to fisheries, increase production and exports, and increase the competitiveness of the fishermen. This year, the entire fishing sector, all coordination teams, groups and their representatives will be present at Crofish. They will hold meetings with representatives of the Ministry of Agriculture and the Fisheries Directorate and will be involved both in expert events and in direct communication with the exhibitors themselves to allow them to express their needs. The fair will also be attended by various sector clusters (aquaculture, etc.), fishing cooperatives and fishermen's associations, FLAGS, and representatives of scientific and research centers from the Republic of Croatia and neighboring countries. They will present various forms of cooperation, examples of good practice, and strategic projects between the Republic of Croatia and Italy and Croatian and Italian FLAGS. Welcome!
Speakers speeches, brief summary and conclusion	Martin Pfannkuchen The lecture was aimed to talk about the state of the Adriatic Sea and publicizing Interreg projects Brigantine and Aliena.
Type of audience/target groups involved	General public, Stakeholders from Italy, Slovenia and Croatia Aquaculture sector Fishermen sector Local authorities Public authorities' Touristic Sector

Target groups	Target groups number reached in this event	Details of involved target
Local public authorities	5	More than 2000 people visited the event



Italy – Croatia

Brigantine

Regional public authorities		
National public authorities		
Sectoral agency		
Higher education and research organizations		
SMEs		
Business support organization		
General public	5	More than 2000 people visited the event

Annexes :

- Photos from events (it is preferable to have few photos where ALIENA logo is visible - on presentation, poster, roll-up, promotional materials etc.),
- Screenshots if online events;
- Invitation letter (if exists),
- Agenda,
- Participation list,
- Abstract,
- press releases,
- etc.
- Photos from events (it is preferable to have few photos where BRIGANTINE logo is visible - on presentation, poster, roll-up, promotional materials etc.)

Program of the event:



Italy – Croatia



PROGRAM DOGAĐANJA CROFISH 2024

PETAK, 22.11.2024.

Organizator zadržava pravo izmjene programa. Detaljan raspored i informacije o svim događajima dostupne su na www.crofish.eu

OTVARANJE, STRUČNA PREDAVANJA (dvorana Žatika, konferencijska dvorana 1)

- 12,00 – 13,00 **SVEČANO OTVARANJE 16. SAJMA „CROFISH“**
14,00 – 15,45 **PANEL: STANJE U HRVATSKOM RIBARSTVU**
MPS - Uprava ribarstva: A. Mišura (ravatelj), I. Jehuška, I. Sušec, IZOR Split: N. Vrgoč,
IRS - CIM Rovinj: M. Plankuchen, CIA-PescAgri: M. Fusco,
Ministarstvo poljoprivrede Crne Gore: K. Burzanović, IBM Kotor: A. Jeksimović
- 16,00 – 16,45 **KAKO KORISTITI M-ZVJEŠĆE**
M. Jurešić, MPS - Uprava ribarstva
- 17,00 – 17,30 **PROMOCIJA PLAVIH KARIJERA**
V. Andrej, MPS - Uprava ribarstva
- 17,45 – 18,15 **STANJE U JADRANSKOM MORU**
M. Plankuchen, IRS-CIM Rovinj

STRUČNI SASTANCI ZATVORENI ZA JAVNOST (dvorana Žatika, konferencijska dvorana 2)

- 17,00 – 18,00 **SASTANAK LAGUR-a**
17,45 – 18,15 **SJEDNICA CEHA RIBARA OBRTNIČKE KOMORE ISTARSKE ŽUPANIJE**

GASTRO DOGAĐANJA (dvorana Žatika, gastro zona)
18,00 – 19,00 **Cooking show**

SPORTSKA DOGAĐANJA

- REGATA „CROFISH OPTIMIST“ - Jedriličarski klub „Horizont“
08,00 – 10,00 Registracija natjecatelja
11,00 – 14,00 Prvi dan natjecanja (Poreč - uvala Peškera)

OSTALA DOGAĐANJA

- 10,00 – 19,00 **POGLED U PLAVO** (Šator na vanjskom prostoru ispred ulaza u dvoranu Žatika)
Besplatna probna ronjenja
10,00 – 16,00 **PREZENTACIJA PLOVILA** (Porečka riva)
10,00 – 18,00 **CROFISH DJEČJI KUTAK**

SUBOTA, 23.11.2024.

STRUČNA PREDAVANJA (dvorana Žatika, konferencijska dvorana 1)

- 10,00 – 10,30 **RAST ŠKOLJKAŠA U JADRANSKOM MORU - NEKI NE VOLE VRUĆE**
M. Penada, IZOR Soli
- 10,45 – 11,15 **INVAZIVNE VRSTE RIBA I RAKOVA U JADRANSKOM MORU**
J. Dulčić, IZOR Split
- 11,30 – 12,00 **PREDSTAVLJANJE MONOGRAFIJE „MORSKI PUŽEVI JADRANA“**
P. Ugarčević
- 12,15 – 13,00 **TRADICIJOM KOMIŠKIH RIBARA**
Pomorska škola Split
- 14,00 – 15,00 **3. CROFISH KUP U UDIČARENJU ZA JUNIORE U PAROVIMA**
Proglšenje pobjednika i podjela nagrada (dvorana Žatika, konferencijska dvorana 1)
- 16,00 – 17,00 **VRHUNSKI POSLOVNI MODEL: OSIGURANJE ORGANOLEPTIČKE IZVRSNOSTI PLAVOPERAJNE TUNE**
PescAgri, CIA, Oceanis
- 17,15 – 17,45 **LUC - ZANIMLJIVA „MALA TUNA“**
V. Tičina, IZOR Split

STRUČNI SASTANCI ZATVORENI ZA JAVNOST (dvorana Žatika, konferencijska dvorana 2)

- 10,00 – 11,30 **SASTANAK LAGUR-a**
12,00 – 13,30 **PROJEKT „MARINET“ - SASTANAK PARTNERA**

GASTRO DOGAĐANJA (dvorana Žatika, gastro zona)

10,00 – 19,00 **Cooking show**

SPORTSKA DOGAĐANJA

- REGATA „CROFISH OPTIMIST“ - Jedriličarski klub „Horizont“
8,00 – 15,00 Drugi dan natjecanja (Poreč, uvala Peškera)
- 9,00 – 13,00 **3. CROFISH KUP U UDIČARENJU ZA JUNIORE U PAROVIMA ŠTAPOM S OBALE**
Poreč, SRD Zubatko
14,00 – 15,00 Proglšenje pobjednika i podjela nagrada (dvorana Žatika, konferencijska dvorana 1)
3. CROFISH KUP U LOVU GRABEŽLJIVACA ŽIVIM MAMCIMA I VARALICAMA
Bere Cerović, Sportsko ribolovno društvo „Pazinčica“
9,00 – 10,00 Dolazak natjecatelja, izvlačenje brojeva, polazak na vodu (Ribički dom)
10,00 – 5,00 23 sata - Trajanje natjecanja u lovu živim mamcima uz mogućnost rođenja na vodi

OSTALA DOGAĐANJA

- 10,00 – 19,00 **POGLED U PLAVO** (Šator na vanjskom prostoru ispred ulaza u dvoranu Žatika)
Besplatna probna ronjenja
10,00 – 16,00 **PREZENTACIJA PLOVILA** (Porečka riva)
10,00 – 18,00 **CROFISH DJEČJI KUTAK**

NEDJELJA, 24.11.2024.

Dvorana Žatika, konferencijska dvorana 1

- 15,00 – 17,00 **27. KUP SVETI MAURO - CROFISH**
Vrgenje, Proglšenje pobjednika i podjela nagrada
- 17,00 – 18,00 **REGATA „CROFISH OPTIMIST“**
Proglšenje pobjednika i podjela nagrada

GASTRO DOGAĐANJA (dvorana Žatika, gastro zona)

10,00 – 19,00 **Cooking show**

SPORTSKA DOGAĐANJA

- REGATA „CROFISH OPTIMIST“ - Jedriličarski klub „Horizont“
10,00 – 14,00 Treći dan natjecanja (Poreč, uvala Peškera)
27. KUP SVETI MAURO - CROFISH
9,00 – 13,00 Udičarenje iz usidrenog broda - Sportsko ribolovno društvo Zubatko
Trajanje natjecanja (Poreč, uvala Peškera)
3. CROFISH KUP U LOVU GRABEŽLJIVACA ŽIVIM MAMCIMA I VARALICAMA
Bere Cerović, Sportsko ribolovno društvo „Pazinčica“
do 9,00 Nastavak cjelodnog natjecanja u lovu živim mamcima
8,00 – 9,00 Dolazak natjecatelja, dogovor, polazak na vodu (Ribički dom)
9,00 – 14,00 Trajanje natjecanja u lovu varalicama
15,00 Proglšenje pobjednika i podjela nagrada

OSTALA DOGAĐANJA

- 10,00 – 19,00 **POGLED U PLAVO** (Šator na vanjskom prostoru ispred ulaza u dvoranu Žatika)
Besplatna probna ronjenja
10,00 – 16,00 **PREZENTACIJA PLOVILA** (Porečka riva)
10,00 – 18,00 **CROFISH DJEČJI KUTAK**

Organizator zadržava pravo izmjene programa. Detaljan raspored i informacije o svim događajima dostupne su na www.crofish.eu



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<https://www.crofish.eu/en/>



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Interreg



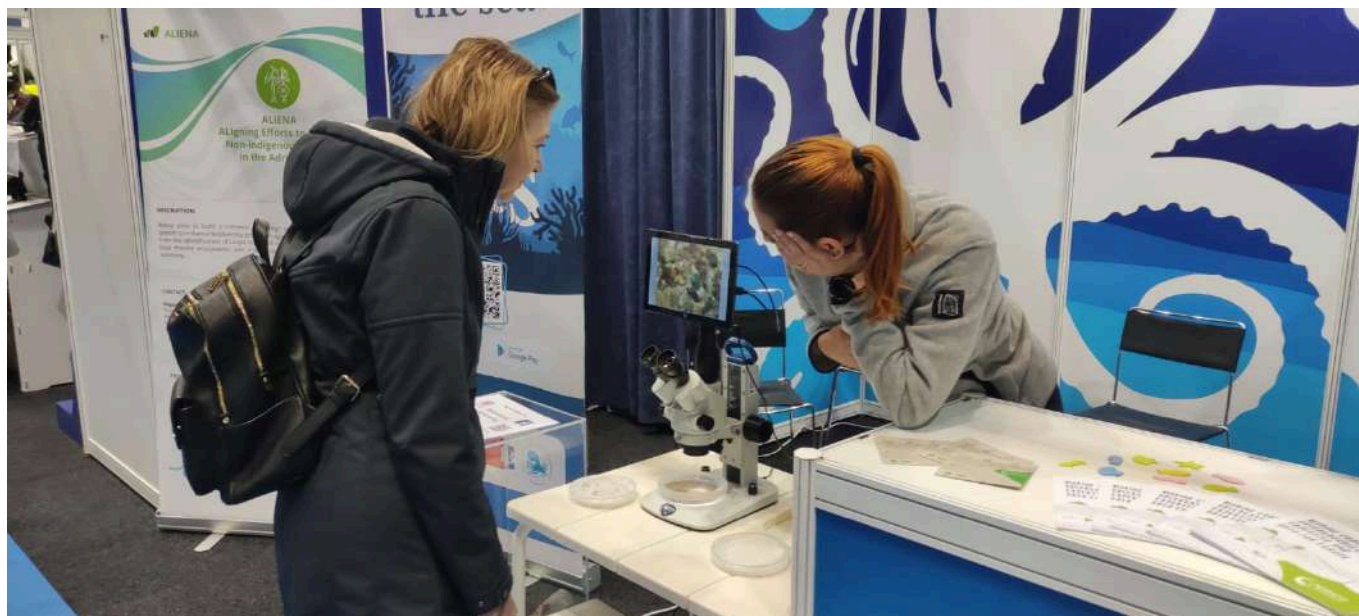
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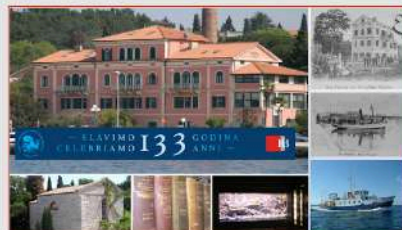




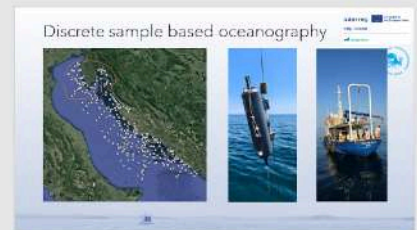
Lecture hall. Foto of the lecture



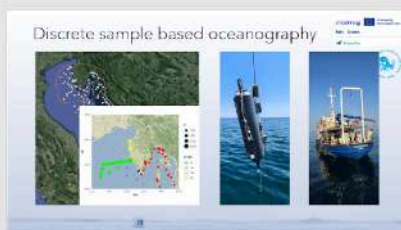
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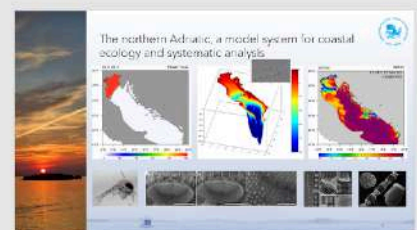
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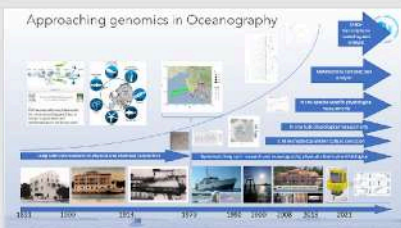
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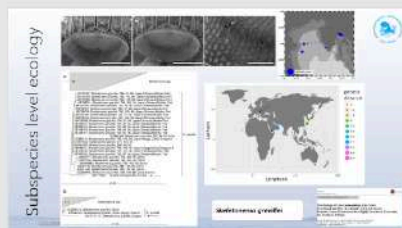
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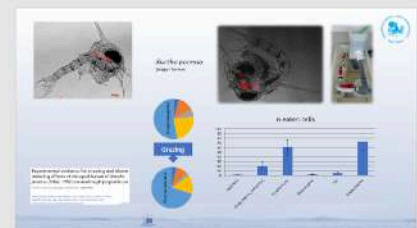
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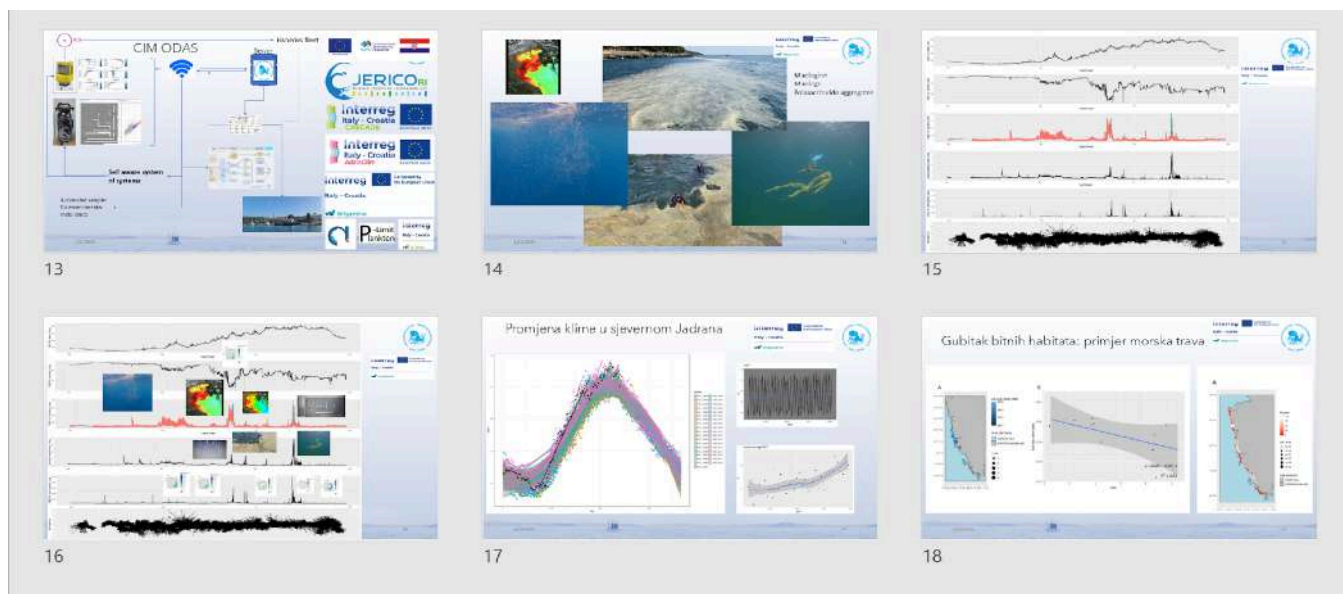


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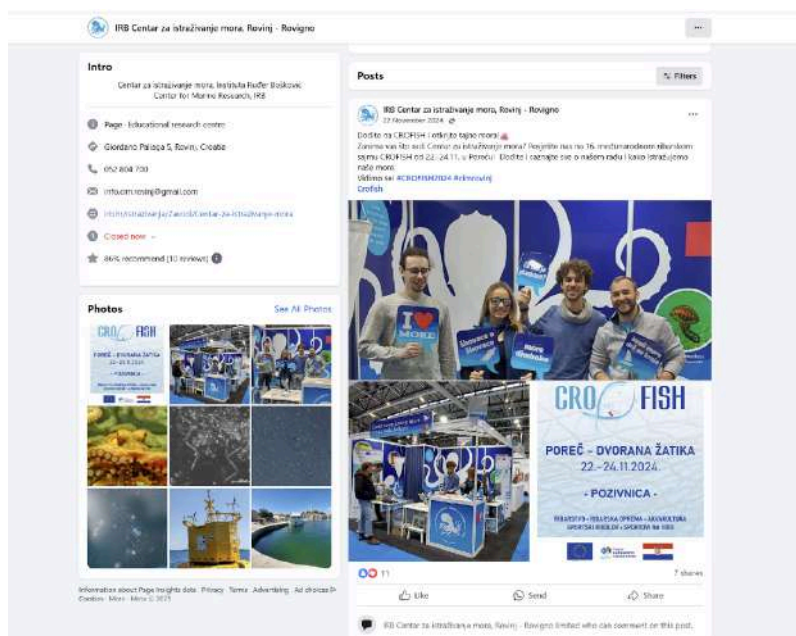


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Facebook post on fair:



<https://www.facebook.com/CIMrovinj>



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INTERREG ITALY-CROATIA PROGRAMME 2021 – 2027

Event follow up report (Annex 1)

Italy – Croatia



Work Package number and name	Work package 2
Activity number and name	Activity 2.4 Dissemination-Goal: dissemination of the project's to different target audiences, both professionals and general public
Deliverable number and name	<i>D.2.4.3 Educational activities</i>

Project Partner	PP3 - Institut Ruđer Bošković (Rudjer Boskovic Institute)
Event name	Lectures to inspire SUBMERGEDSM challenge
Date	14.11.2024.
Event type	<i>Workshop, training course, webinar, etc.</i>
Event venue	<i>in presence</i>
Description of the event	We gave two lectures to the students from the association Centar pozitron Poreč (https://centar-pozitron.hr/) on November 24. 2024.. They are participating on First Lego League Croatia and the focus is submerged challenge. In the SUBMERGEDSM challenge, FIRST[®] LEGO [®] League teams will use creative thinking and LEGO [®] technology to explore the layers of the ocean and bring their learnings and ideas to the surface as they “sea” into the future.
Speakers speeches, brief summary and conclusion	Dr.sc Daniela Maric Pfannkuchen gave them a lecture on the INTERREG project ALIENA. Focus of the talk was on invasive species in the Adriatic SEA and the big threat of Alien species on native ecosystems. PhD Ivan Podolšak gave a lecture on research and sampling techniques in northern Adriatic Sea. The point of the lectures was to inspire the students for their challenge.
Type of audience/target groups involved	students and their teachers



Italy – Croatia



Target groups	Target groups number reached in this event	Details of involved target
Local public authorities		
Regional public authorities		
National public authorities		
Sectoral agency		
Higher education and research organizations		
SMEs	1	8 school students
Business support organization		
General public		

Annexes :

- Photos from events (it is preferable to have few photos where BRIGANTINE logo is visible - on presentation, poster, roll-up, promotional materials etc.),
- Invitation letter (if exists),
- Participation list,
- etc.







Presentation:

PRICUPIJANJE OCEANOGRAFSKIH PODATAKA

34. studenog 2024.
Ivan Podaric
mag. plov.

SIEVERNI JADRAN

- najproduktivniji dio Jadrana
- izrazite sezonske i dugoročne fluktuacije oceanografskih i bioloških uvjeta
- velika ekološka važnost zbog bogate biološke raznolikosti i jedinstvenih karakteristika

LOKALNI ČIMBENICI

- povećanje površinske temperature mora
- negativni trendovi u obrascima padalina
- smanjeni dotok slatke vode i hranjivih tvari

SIEVERNI JADRAN

Globalne i atmosferske klimatske promjene mijenjaju toplinske uvjete u Jadranu, a samim time i morski ekosustav.

Poluzatvorena priroda u kombinaciji sa smanjenom inercijom zbog relativno kratkog vremena zadržavanja vodenih masa čini ga vrlo reaktivnim na vanjske sile, posebice zagrijavanje.

Oceanografija kroz povijest

Podaci prikupljeni u oceanu, na njegovoj površini ili iznad njega čine temelj oceanografije.

Početak:

- fizičke oceanografske ekspedicije
- geološko kartiranje
- biološka i ribarika istraživanja

SVRHA

Istraživanja u svrhu opisa i razumijevanja funkcijaorskog sustava.

Praćenje stanja oceana.

Metode uzorkovanja

- klasične metode uzorkovanja s obale i plovila
- oceanografske plutače i senzori
- sateliti

Vrste podataka

- IN-SITU
- NEAR REAL-TIME
- REAL TIME

IN-SITU	NEAR REAL-TIME	REAL-TIME
Podaci prikupljeni mjerenjima izravno iz morskog okoliša na mjestu od interesa	Podaci koji se prikupljaju i obrađuju s kratkom odgodom od trenutka mjerenja	Podaci koji se prikupljaju i prenose trenutno ili s minimalnim kašnjenjem

OCEANOGRAFSKI PODACI

FIZIKALNI	KEMIJSKI	BIOLOŠKI
STANJE MORA	SASTAV MORSKE VODE	BIJELI I ŽIVOTINJSKI SVJET
VIDENE MASE	OTOPLENI PLINOV	
PROCESI U MORU	HRANJIVE TVARI	

BAZE I OBRADA PODATAKA

Organizirani skupovi podataka

- lokalne
- nacionalne
- regionalne
- globalne

EMODnet
SeaDataNet

Od morskih nepredviđivih varijabli i nepredviđivih događaja, kao što su ekstremne vremenske prilike, do distribucije biološke zajednice, prikupljanje oceanografskih podataka bitno je za razumijevanje našeg planeta i rješavanje trenutnih i budućih problema.

HVALA NA PAZNJI!



Second presentation on alien species in the Adriatic Sea held by Daniela Maric Pfannkuchen





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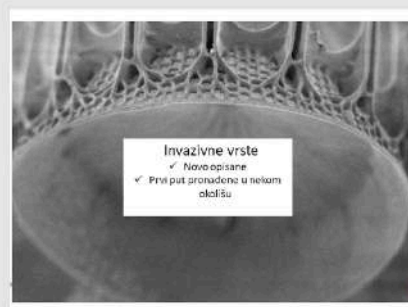
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WET LABS

- Preparation of samples
- Sample sedimentation
- Unfiltered method
- Counting on light sensor: mikroskopija
- Photoplate analysis
- Species list

Laboratory – size

- Small number of samples for day
- Long lasting education of analysts
- Subjecting of analysts
- Some species empty cell
- Not collected on light sensor



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Italy - Croatia

Colloquium
at the Computer Center

Reading biodiversity with molecular methods

eu GREEN

- Typical methods and protocols for the identification of species
- Global molecular identification of all animal species in the world



Isolation genomic DNA

- Protocols isolation of plants
- Of microorganisms

Replication of the DNA genes

- PCR amplification
- Clonage (10-1000, 10000 and more)
- Gel electrophoresis

NGS sequencing

- Illumina sequencing

Identification

- Molecular markers, NGS software
- Bioinformatic programs (BLAST, MEGA, etc.)
- Phylogenetic relationships








20

[illegible]

21

22

During the September – October another species from the family Characeaceae reaches high abundances. *Ectocarpus junciformis* is a weakly silicified alga is regularly recorded. This species is weakly silicified and is mainly characterized by a large aperture between cells at the flange, with specific coxides which are formed by polysaccharide fibrillar network

22



Italy - Croatia



EUROPEAN UNION
ERDF - ERDF



ERDF

ŠTO PRODUŽITI?

Ovo što je specifično za većinu investitivnih vrsta je to da su otpornije i prilagodljivije od autohtonih vrsta.

Mnoge zemlje imaju slični problemi s invazivnim vrstama, ali se kroz zbirg odabir ili izdvoje neke druge vrste mogu povećati u potrošnju i stvoriti dodatnu novu autohtonu vrstu. Kako ne bi došlo od takvog stvaranja, potrebno je pronaći na vrijeme. Evo kako:

- Prilikom odlaska na stranu vrstom dobri i poljati pronaći nekakve neželjene vrste, uključujući i vrste koje su izvan područja, uključujući i vrste koje su izvan područja, uključujući i vrste koje su izvan područja.
- Sudjelovati na radionicama i seminarima vezanim za invazivne vrste kako bi dobili informacija o vrstama koje bi mogle biti u našim područjima.



ERDF

34

25



interreg

EU FUNDING FOR THE BALKAN COAST

Italy - Croatia

vF FUNDING

Website Address:
www.italycroatia-interreg.eu

EU Funding for Italy: 100 million

EU Funding for Croatia: 100 million

Project Start: 2014

Project End: 2020

Project Lead: Interreg Italia-Croatia

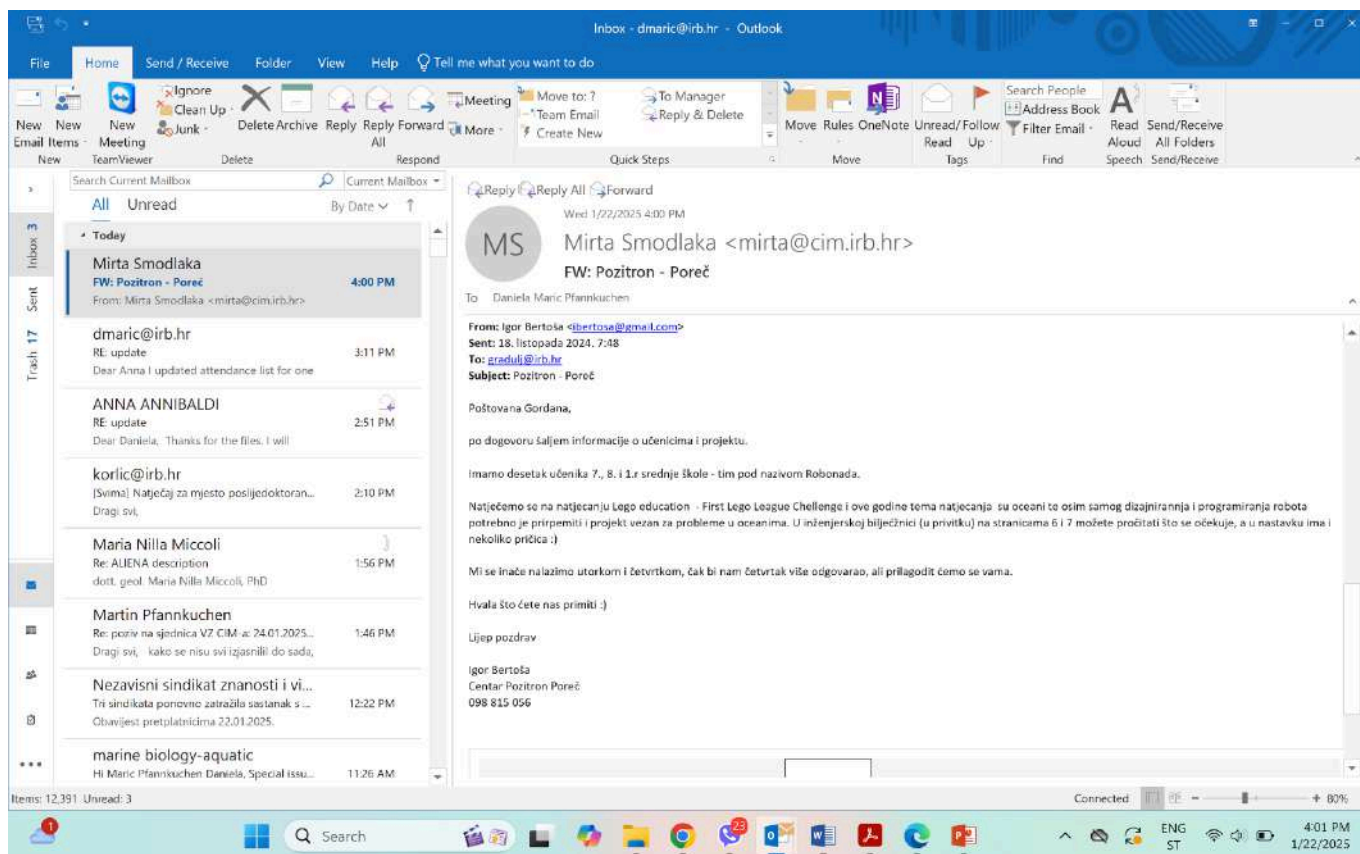
Project Manager: Interreg Italia-Croatia

26

Invitation:



Italy – Croatia



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Italy – Croatia

 **Brigantine**

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INTERREG ITALY-CROATIA PROGRAMME 2021 – 2027

Event follow up report (Annex 1)

Italy – Croatia

Brigantine

Work Package number and name	Work package 2
Activity number and name	Activity 2.4 Dissemination-Goal: dissemination of the project's to different target audiences, both professionals and general public
Deliverable number and name	<i>D.2.4.3 Educational activities</i>

Project Partner	<i>PP - Institut Ruđer Bošković (Rudjer Boskovic Institute)</i>
Event name	
Date	9.10.2024.
Event type	<i>Workshop, training course, webinar, etc.</i>
Event venue	<i>Specify in online or in presence</i>
Description of the event	On October 9. 2024. 25 participants on the project Erasmus+ from V Gymnasium from Zagreb visited Center for marine research Rudjer Bosković Institute. They have 2 lectures in practicum of approximately 30 min each. Later on, they visited aquarium and had more practical lessons on 4 points. Later they went to the molecular biology laboratory where they were introduced to sample processing, the methodology for DNA extraction and processing of the genomic DNA in the laboratory.
Speakers speeches, brief summary and conclusion	PHD student Ivan Podolšek gave them lecture about sampling in the sea and brigantine project. Dr.sc Daniela Maric Pfannkuchen gave them a lecture on invasive species in the Adriatic SEA. Later the students and teachers went to aquarium where dr.sc. Nataša Kužat and PhD Ivan Vlašiček showed them <i>Ostreopsis ovata</i> cultures on microscope and live phytoplankton samples. Victor Stinga Perusco introduced them to the plastic and microplastic in the sea. Denis Škalc show them the instruments used for sampling while Dr.sc. Tjaša Kogovšek show them <i>Mnemiopsis lady</i> and other gelatinous organisms. After the visit to aquarium the group went to molecular biology lab where student Mia Knjaz introduced them to the basic's techniques for DNA isolation and sequencing. The visit



Italy – Croatia



Type of audience/target groups involved	Gymnasium students and their teachers
---	---------------------------------------

Target groups	Target groups number reached in this event	Details of involved target
Local public authorities		
Regional public authorities		
National public authorities		
Sectoral agency		
Higher education and research organizations	1	25 high school students
SMEs		
Business support organization		
General public		

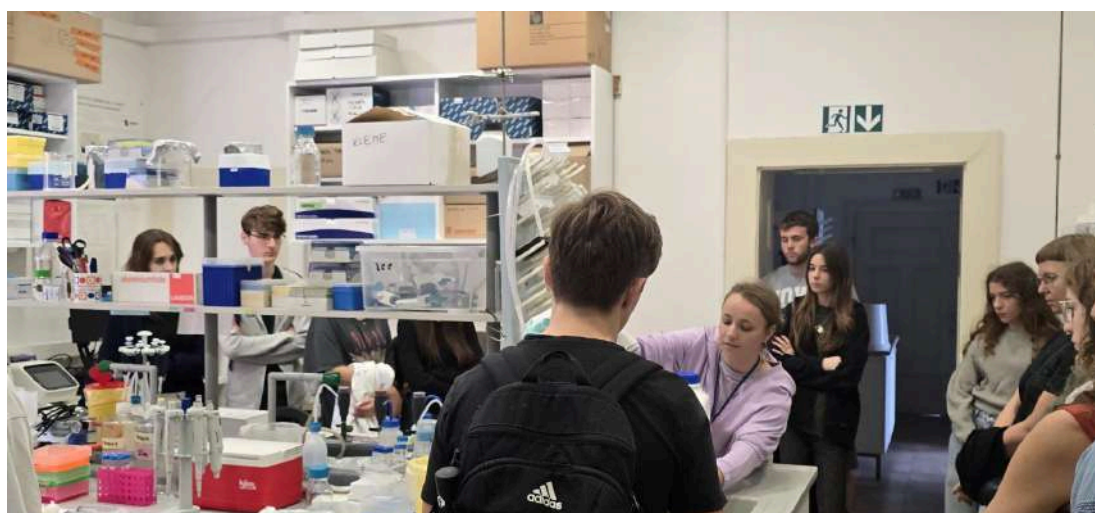
Annexes :

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 - Screenshots if online events;
 - Invitation letter (if exists),
 - Agenda,
 - Participation list,
 - Abstract,
 - press releases,
 - etc.
-
- Photos from events (it is preferable to have few photos where ALIENA logo is visible - on presentation, poster, roll-up, promotional materials etc.)









Presentation:





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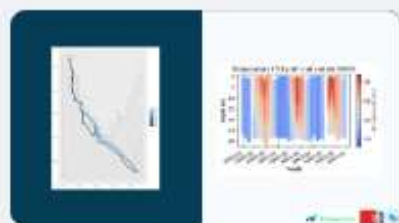


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Italy – Croatia

Brigantine



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11



12



13

Lecture 2



7

interreg
Italy - Croatia

ŠTO/TKO SU TO - INVAZIVNE VRSTE ?

Invazivne, ušibane, strane, tuđe, egzotične vrste su one od kojih se najviše očekuje da će biti štetne za ekosustav, ali neke od njih mogu biti i korisne. One su one vrste koje su uvedene izvan svojeg prirodnog područja i koje su se proširile na područja izvan svojeg prirodnog područja. One su one vrste koje su uvedene izvan svojeg prirodnog područja i koje su se proširile na područja izvan svojeg prirodnog područja.

8

IN FOCUS

KAKO SE ŠIRE/ PRENOSE INVAZIVNE VRSTE ?

Prima sličnosti s ovim vrstama, ali neke od njih mogu biti i korisne. One su one vrste koje su uvedene izvan svojeg prirodnog područja i koje su se proširile na područja izvan svojeg prirodnog područja.

9

ZAŠTO SU OPASNE ? DO ČEGA DOVODE

Strane vrste su prikladne za život u našem području, ali neke od njih mogu biti i korisne. One su one vrste koje su uvedene izvan svojeg prirodnog područja i koje su se proširile na područja izvan svojeg prirodnog područja.

10

interreg
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Invazivne vrste

Google Images search results for 'Invazivne vrste' showing various invasive species.

11

Vatrenjača Pterois miles
na engleskom Lion fish

INVAZIJA NA JADRAN Tropska vrsta postaje - naša: vatrenjača ima otrov u perajalima i ubod joj je bolan, nema prirodnih neprijatelja i vrlo je štetna po ekosustav

12






Italy Croatia

EU Regional Development Fund



Vukovar (Ploča rila) – mala je i nepopunjivih vruća rila, odlegala je zbog prebrane velikom tolikom autozavla-
riliju vruća, velike reproduktivne moći te
otrovni bodi. Ova vruća rad vruće
problema na području države. Sredozemna
mora. U lafardova moru, pri je put
sah (veljuna 2019. godine



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problema na području države. Sredozemna
mora. U lafardova moru, pri je put
sah (veljuna 2019. godine



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problema na području države. Sredozemna
mora. U lafardova moru, pri je put
sah (veljuna 2019. godine

13

16



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Co-funded by
European Union

Plavi rak



Latinski naziv: *Callinectes sapidus* Rathbun

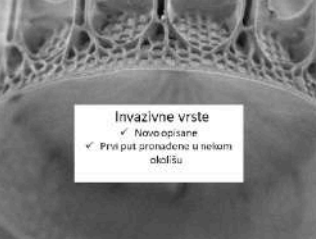
Opis: Plavi rak je raženo morska vrsta, ali za mirajst bira boćane vode. Oklop mu je malinastoboj, a noge i klješta su plavi. Peta naga mu ima otkla vode, klješta su rožnata, a nitinja je svetlozuta tanja. Ispod, što su prilagođeno za kretanje dobara pilloboz spreobitni. Dozognu masu od 0,45 – 0,9 kilograma.

Negativni učin

Ekološki: hrani se životinjim vrstama pa nemoći razvotožiti lokalnu zajednica

Ekonomski: čistoćuje mende i uboljenja riba, pristojna ugostiteljima dogni i kamerica

14



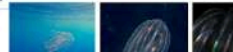
Invazivne vrste
 ✓ Novo opisane
 ✓ Prvi put promećene u našim okolišu

17




EU Regional Development Fund
 Interregional Cooperation

Italy – Croatia
 2014-2020

Mnemiopsis leidyi - Morski orah

Mnemiopsis leidyi pripada koloniji meduza (Ctenophora) koji su na prvi pogled slični žamucima, osobito meduzama, no od njih se razlikuju po tome što nemaju žarnice pa tako ne predstavljaju opasnost za ljude. Imaju osam redova urušitno počinjenih pločica – rebra po kojima je cijelo koljeno dobilo ime. Pločice (klične) su nastale spajanjem trepetiljaka (kličja) i mogući su im prijelazi u svim smjerovima.

15

interreg
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Italy - Croatia

ALBA



18

interreg 

Italy - Croatia

EU ERDF

Project of cooperation
European investment
Unfunded method
Cooperation in the economic microscope
Photoplastic abundance
Species list

mikroskopija



Limitations – slow
Small number of samples for day
Long waiting evaluation of analyses
Subjectivity of analysts
Some species empty cell
be collected in light microscope






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Collected by
the European Commission

Research biodiversity with molecular methods

EUROPEAN COMMISSION

• Field and semi-field for the identification of virus infectivity

• Viral infection confirmed in cell lines (animal origin - confirmed)

Isolation general DNA:

- Fluorescence-activated sorting
- Gel electrophoresis
- Real-time PCR of specific genes
- In silico analysis
- Confirmation in cell lines (animal origin - confirmed)
- In silico analysis of specific genes

Next sequencing:

- Virus sequencing

Identification:

- Antibody detection, RT-PCR, sequencing
- Sequence comparison with NCBI
- Confirmation in cell lines
- Confirmation in cell lines







20

The slide is titled "interreg" and "Evaluating the European Urban". It features a world map with a color-coded legend for "Urbanization" (0 to 100%). Below the map, there is a section titled "The Linking of the European Urban Study" which describes the project's goals: to develop a common framework for urban studies, to develop a common methodology for urban studies, and to develop a common database for urban studies. To the right of the map, there is a small inset map of Europe with a color-coded legend for "Urbanization" (0 to 100%). Below the inset map, there is a bar chart titled "Urbanization" showing the percentage of urban population in different European countries. The chart shows that the percentage of urban population is highest in Germany (around 85%) and lowest in Greece (around 25%).

21

22

During the September – October another species from the family Cyanocececeae reaches high abundances. *Nostoc commune* (synonym: a weakly sheathed filament) is regularly recorded. This species is weakly sheathed and is mainly characterized by a large aperture between cells in the filament, with specific colonies which are formed by polysaccharide fibrillar network.

23

[illegible]

24



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25



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D2.5.2 Student in action: Project presentation to high school

Organized by UniUD

Udine, 14/04/2025

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Italy - Croatia

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D3.4.4 Activity Lab

UniUD Sailing Lab

Organized by University of Udine

Udine, 21.02.2025

**Italy – Croatia**

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50	Stefano Orecchia	4LSA	Stefano Orecchia	☐ Yes ☒ No

51 Giacomo Rosa 4LSMA

Giacomo Rosa

X
No
No

52 Roman Panni 4LSMA

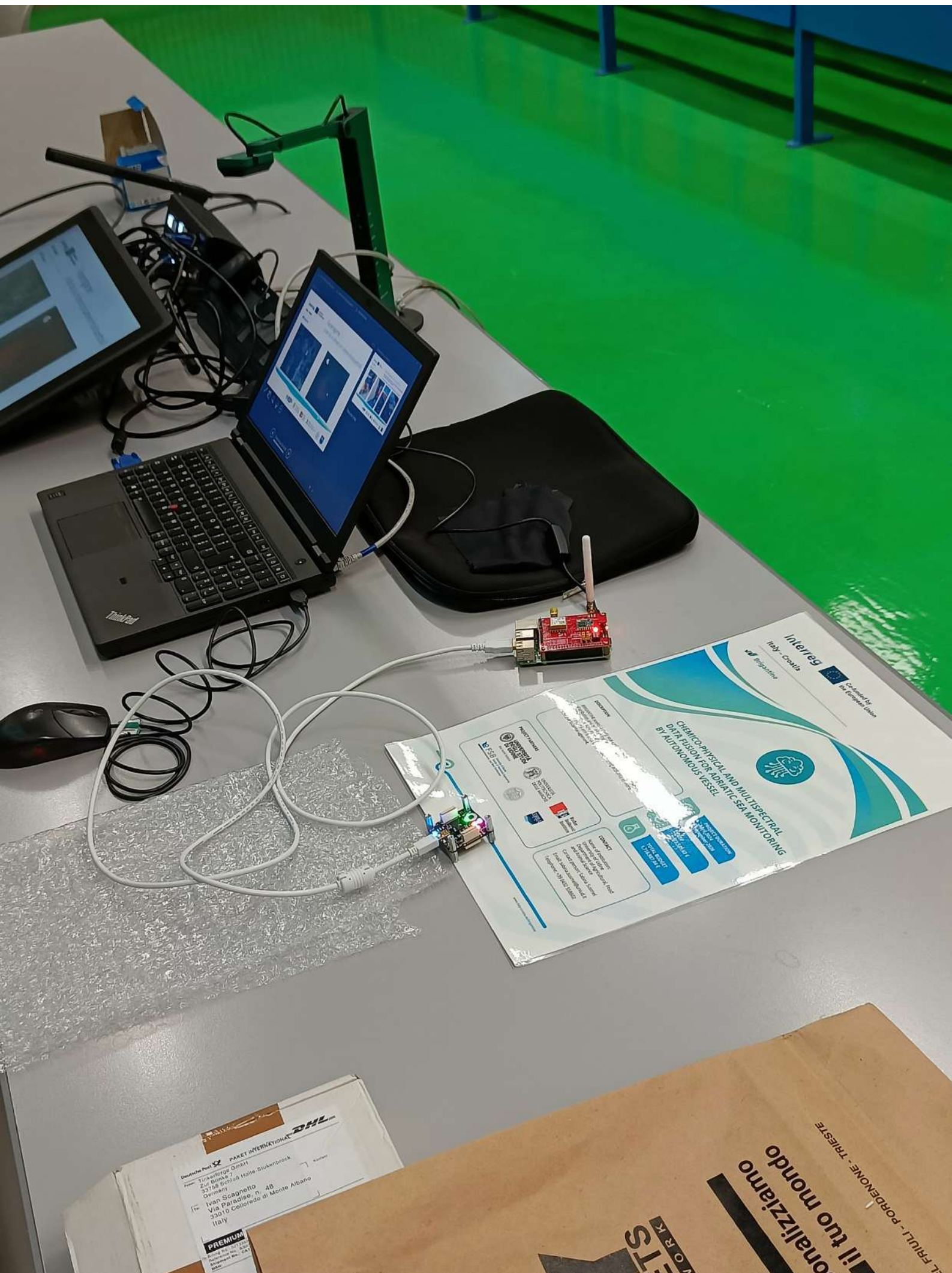
Roman Panni

X
No
No

**Italy – Croatia****Brigantine****Abstract**

This activity lab has been organized in the scope of the PLS (Programma Lauree Scientifiche, i.e., Science Degree Program) initiative "Le scienze della vela" (i.e., "The sciences of sailing") of the Department of Mathematics, Computer Science, and Physics (DMIF) of the University of Udine. The initiative aims to introduce students of high schools to the mathematical, physical and technological basics of sailing, and to the possible applications of a sailing vessel, including the monitoring of sea. In particular, one lesson has been devoted to the technological details of the monitoring of sea by means of autonomous vehicles (deployed from a sailing vessel), and, in particular, to the BRIGANTINE project.





interreg  Co-funded by the European Union

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BRIGANTINE Project

Chemico-physical and multispectral Data fusion for Adriatic sea monitoring by autonomous vessel

Programme priority: Sustainable growth in the blue economy

Specific objective: Developing and enhancing research and innovation capacities and the uptake of advanced technologies

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