FORTHEM CLIM[illegible] & RESOURCES LAB: EXPERTISE IN RESOURCES AND ENERGY

University	Research	Research topic relative to Climate and Resources	Contact
University of Burgundy	ICMUB [illegible] CNRS 6302	Dihydrogen (H2) as an energy source and reagent: sustainable storage, production, reactivity in catalytic uses	Jean-Cyrille Hierso; hiersojc@u-bourgogne.fr
University of Latvia	Centre of Natural Resources Research	Biorefinery and valorisation of biomass, effective utilisation of biomass waste	maris.klavins@lu.lv
University of Palermo	Laboratory of Marine Biology and Resources	Blue economy: development of sustainable aquaculture techniques and processes based on the circular economy	Salvatrice Vizzini salvatrice.vizzini@unipa.it
University of Valencia	Redoli[illegible] organic chem[illegible] Department.	Develop more sustainable methods of synthesis using sold state microwaves. Research in nanomaterials and agri-food.	j.vicente.ros@uv.es
University of Mainz	De[illegible]ment of Geosciences, Tectonics and Structural Geology	Geothermal reservior characterisation, structural processes that affect ore mineralisation, understanding fracture-related permeability	virginia.toy@uni-mainz.de
University of Opole	Institute of Environmental Engineering and Biotechnology	Biomonitoring and environmental monitoring, biosorption and bioaccumulation, phytoremediation, environmental bioanalytics, radioisotopes in the environment, energy efficiency of buildings	Andrzej Kłos, aklos@uni.opole.pl
University of Opole	Institute of Environmental Engineering and Biotechnology	Radionuclides in soil and the environment. Modelling chemical reactors, mycology, phytopathology, biotechnological enrichment of useful minerals, metal-bearing waste.	Agnieszka Dołhańczuk-Śródka agna@uni.opole.pl
University of Jyväskylä	JYU.Wisdom - School of Resource Wisdom	Planetary well-being including resource wisdom, circular economy and sustainability of the use of natural resources	Wisdom Coordinator, Jonne Hytönen; jyu.fi/en/research/wisdom
University of Jyväskylä	School of Business and Economics	Carbon emissions calculations in the transportation sector	Stefan Baumeister, stefan.c.baumeister@jyu.fi
University of Jyväskylä	Chemistry	Hydrometallurgy, metal recovery, rare earth metals, metal analysis	siiri.e.peramaki@jyu.fi
University of Jyväskylä	Department of Chemistry	Low-temperature matrix isolation; computational chemistry (ab initio and molecular dynamics); selective laser-induced chemistry Science education; teacher training; design research, project-based education	Jan Lundell; jan.c.lundell@jyu.fi

Laboratory of Marine Biology and Resources

https://www.unipa.it/dipartimenti/distem/laboratori-00001/labiomar/
salvatrice.vizzini@unipa.it

Università degli Studi di Palermo

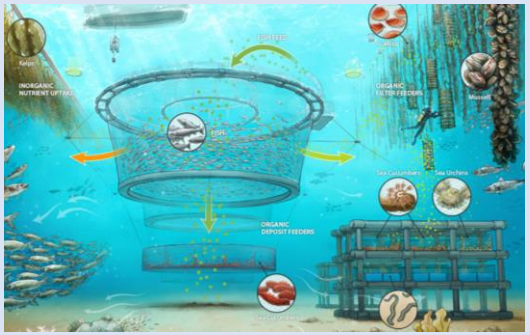
Resources and Energies_Blue Economy and Blue Growth

Staff

Heads of the group:
Prof. Salvatrice Vizzini
Prof. Antonio Mazzola

Scientific staff:
Dr. Geraldina Signa

PhD Students:
Dr. Laura Ciriminna



Integrated multitrophic aquaculture

Development of sustainable feeds for aquaculture by recycling food processing discards

Experimental rearing of invertebrates of economic importance

Projects

RITMARE Flagship Project - Italian Research for the Sea (Italian Ministry of Education, University, and Research)

INNOVAQUA (National Operative Programme, Italian Ministry of Education, University, and Research) – Development of innovative Network for technological innovation in aquaculture

Interventions to support the advanced integrated and sustainable development of aquaculture

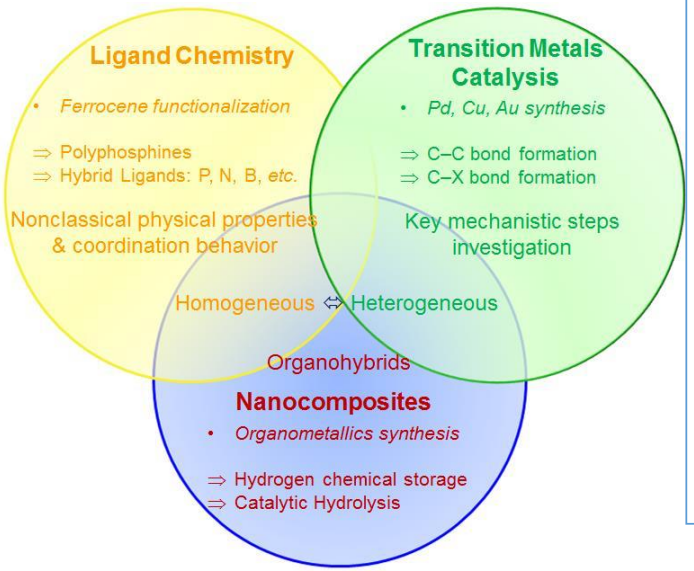
INSAIL (National Operative Programme for Research and Competitiveness, Italian Ministry of Education, University and Research) - Interventions to support the advanced integrated and sustainable development of aquaculture

Methodological approach:

Analysis of feed assimilation, growth performance and nutritional quality of products through analiysis of Stable Isotopes $\delta^{13}C$, $\delta^{15}N$ (IRMS and EA) and Fatty Acids (GC)

We study molecular organic and organometallic chemistry
For proposing => catalytic nanomaterials for alternative energies

Pr. J.-C. HIERSO group, ICMUB CNRS-Dijon
Dr. M. L. KAHN group, LCC CNRS-Toulouse



ICMUB-LCC **CHEMISTRY PROJECT** : HIGHLY EFFICIENT RECYCLABLE NANOCATALYSTS FOR **HYDROGEN PRODUCTION FROM SOLID STORING**

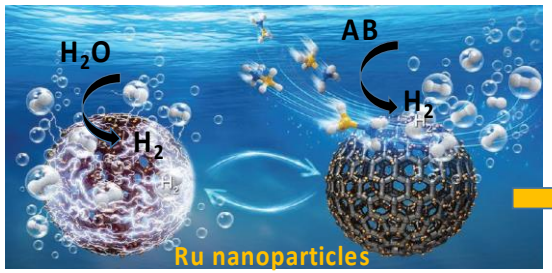
✓ Metal Hydrides or Amine-Boranes (**AB**) *with useful usable waste*
⇨ Boron Nitride products for high technology materials (refractory coatings)

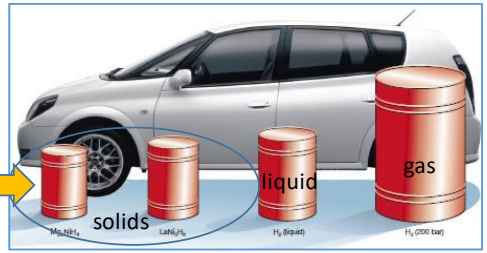
✓ **Metal nanoparticles systems** for H_2 extraction from **solid storing materials**
⇨ **unified systems for AB** hydrolysis and water H_2O electrolysis

RESEARCH METHODS: Experimental synthesis of molecules and nanocomposites : metals, oxides, etc.
⇨ Molecules characterization: multinuclear NMR, DRX, IR, EA, *etc.*
⇨ Materials characterization: TEM, SEM microscopy, XPS, DRX, *etc.*

A secured **hydrogen-based economy** for a **controlled and progressive change** in our standard of living, while lowering carbon dioxide warming and toxic gas emissions.

⇨ **Systems for AB** hydrolysis and water H_2O electrolysis





Structural Geology and Tectonics Working Group

JG|U Institute of Geosciences, Johannes Gütenberg University of Mainz, Germany
Working Group Leader: Prof. Dr. Virginia Toy virginia.toy@uni-mainz.de
https://www.geosciences.uni-mainz.de/tectonics-structural-geology-group/

We study Earth's tectonic fault zones. These structures strongly influence the distribution of **Earth resources**, as well as topography and thus **Global climate**


Prof. Dr. Virginia Toy


Dr. Martina Kirilova


Ms Selina Fenske


Dr. Friedrich Hawemann

Research Projects:

We also explore fault zones in scientific drilling projects e.g. The Deep Fault Drilling Project, DFDP (alpine.icdp-online.org)

Permeable fracture and porosity systems are detected automatically in CT scans of drillcore and synchrotron CT scans

seismic hazards

geothermal fields

mineral deposits

10km

20km

30km

Research Methods:

We document structural relationships in the field and collect samples for:

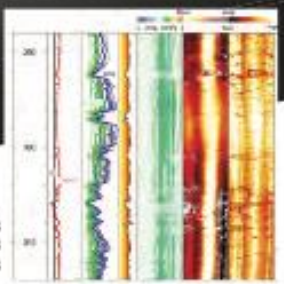
Microstructural observations

Laboratory measurements

Computational experiments are based on microstructural observations

We attempt to relate rocks' structures and compositions to their geophysical properties to facilitate remote exploration of the deep Earth

Resistivity structure of the Alpine Fault Zone from magnetotelluric methods



We correlate lab measurements of rocks' geophysical properties to downhole geophysical logs

Background Image: Oblique aerial view of the Pacific-Australian Tectonic Plate Boundary through New Zealand's South Island, and a vertical profile through the underlying Alpine Fault Zone

Natural Resource Research Centre of University of Latvia

Leader of Working Group Prof. Maris Klavins

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Prof., Dr. habil.chem. Māris Kļaviņš | Dr. chem. Linda Dobkeviča | Dr. biol Laura Kļaviņa | Dr. geogr. Oskars Purmalis | PH.D. pretender Rūta Ozola | Dr. chem. Linda Ansone-Bertiņa | Ph.D. student Linards Kļaviņš | Ph.D. Karina Stankeviča | Dr. chem. Zane Vincēviča-Gaile | Dr. geol. Juris Burlakovs

ABOUT NatRes CENTRE

The Natural Resource Research (NatRes) Centre of the University of Latvia is an independent unit coordinating interdisciplinary research on natural resources exploration, interdisciplinary nature-related projects, sustainability provision and management, environmental awareness and education.

NatRes Centre holds several **own laboratories** and actively cooperates with other scientific units. It serves as a hub to establish project teams capable of solving complex problems. Major activities are related to the development of approaches enabling sustainable management of natural resources and waste processing (waste-to-energy, waste as a resource), providing analytical services to enterprises, and working on contract research.

TOPICAL RESEARCH FIELDS

Natural resources (e.g., sediments, peat, clay, biomass) – investigated independently or as a part of the integrated research exploring the climate in the past, environmental reconstruction, ecosystems of deposits, landscape planning, new product development.

Wild and cultivated plants – performing a complex investigation of plant composition and identifying biologically active substances using environmentally friendly, solvent-free extraction methods and applying pharmacological activity studies in vitro.

RESEARCH METODS

Field studies (expeditions, in situ measurements and sampling)

Analytical research

- trace and major element quantification by ICP-OES, AAS, TXRF
- extraction of humic substances, detection of humic acids, fulvic acids
- FTIR, UV/Vis, GC, LC, MS

Biological methods

- pollen-spore composition
- composition of macrofossils, microfossils, malacofauna, etc.
- microbiological composition
- determination of biologically active substances and contaminants (anthocvanins. sterols. essential oils.

MORE INFORMATION on OUR WEBPAGE - WWW.NATRES.LU.LV