

Presentation

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The Research Infrastructure Centre of the Faculty of Natural Sciences and Engineering (NTF) is a part of the Network of research and infrastructural centres at the University of Ljubljana (MRIC UL). Its performance is financed by the Slovenian research agency.

Infrastructure centre of Faculty of Natural Sciences and Engineering (RIC UL-NTF) supports scientific research, teaching and professional work in areas of production, functionalization and characterization of various organic and inorganic materials, with an emphasis on fiber forming and other polymeric (textile and graphic), metallic, non-metallic and composite materials, metallurgy, textile and graphic production technologies, geotechnology, mining and geoenvironment, geology and environmental protection. The equipment enables numerical modeling and design of ecofriendly materials, products, processes and technologies. It allows the simulation of physical processes.

RIC UL-NTF combines all the great equipment of the Faculty of Natural Sciences and Engineering, known by its high quality in terms of performance accuracy, ongoing maintenance and high professionalism of staff, performing the work on the equipment. Activity of RIC UL-NTF takes place within thirteen laboratories:

- Laboratory for Mechanical Textile and Graphics Technology,
- Laboratory for Chemical Textile and Graphics technology,
- Laboratory for Testing of Textile and Graphic Materials,
- Analytical Laboratory,
- Laboratory of Engineering Materials,
- Laboratory for Casting,
- Laboratory for Metallography,
- Laboratory for Metallurgical Process Engineering,
- Laboratory for Transformation of Materials,
- Laboratory for Thermal Engineering,
- Laboratory of Geotechnical Engineering,
- Laboratory for Mechanical Process Engineering and
- Laboratory of Mineralogy, Petrology and Materials.

RIC UL-NTF provides infrastructure support to researchers from the Faculty of Natural Sciences and Engineering and supports their collaboration with research groups at the University of Ljubljana and other Slovenian universities, public research institutes in Slovenia and abroad. By its support high quality research are enabled within the framework of research programs, basic, applied, postdoctoral and targeted research projects funded by the Slovenian Research Agency, the EU and other international projects, COST actions, bilateral projects and training of young researchers.

An important activity of RIC UL-NTF is its integration in the teaching process at the Faculty of Natural Sciences and Engineering. With its hardware and analytical equipment is actively involved in practical laboratory work, seminars, bachelor, master and doctoral theses.

RIC UL-NTF is involved in economy research. With a variety of expertise is supporting the development projects of the Slovenian textile, metallurgy, metal processing, mechanical and electrical industry as well as a variety of large and small enterprises.

RIC UL-NTF supports the government agencies and departments. It collaborates with various associations, organizations, institutions, museums and other users.

Infrastructural support to research activities

1 Research programmes+

UL NTF as leading RO

- P1-0195 Geochemical and structural processes (head Tadej Dolenc, UL NTF), duration: 1.1.2013 – 31.12.2017
- P2-0205 Synthesis and characterisation of materials (head Borut Kosec, UL NTF), duration: 1.1.2014 – 31.12.2019
- P2-0213 Textiles and ecology (head Barbara Simončič, UL NTF), duration: 1.1.2015 – 31.12.2019
- P2-0268 Geotechnology (head Milan Terčelj, UL NTF), duration: 1.1.2013 – 31.12.2015
- P2-0344 Functionally graded materials (head Goran Kugler, UL NTF), duration: 1.1.2013 – 31.12.2016

UL NTF as participant RO:

- P1-0011 Regional geology (leading RO: Geological survey of Slovenia, head Tea Kolar-Jurkovšek), duration: 1.1.2014 – 31.12.2018
- P5-0367 Research on learning and teaching in contemporary society (leading RO: UL PEF, head Saša Aleksej Glažar), duration: 1.1.2013 – 31.12.2016
- I0-0026 Raziskovalni infrastrukturni center UL NTF (only Slovenian language) (leading RO: UL, head Martin Čopič), duration: 1.1.2010 – 31.12.2014

More info: <http://www.sicris.si/search/org.aspx?opt=5&lang=slv&id=768>

2 ARRS projects+

UL NTF as leading organisation:

- J5-5535 Development of information literacy of university students as a support for solving authentic science problems (head Bojana Boh, UL NTF), duration: 1.8.2013 – 31.7.2016
- L1-5452 Application of sonar in research of active tectonics and paleoseismology in low-strain environments (head Marko Vrabc, UL NTF), duration: 1.8.2013 – 31.7.2016

UL NTF as participant RO:

- J5-6814 Pojasnjevanje učinkovitosti reševanja problemov s področja trojne narave predstavitev naravoslovnih

- pojmov (Slovenian) (head: UL PEF, Saša Aleksej Glažar), duration: 1.7.2014 – 30.6.2017
- J1-6742 Raziskave začetnih stopenj faznih transformacij v mineralih (Slovenian) (head: IJS, Nina Daneu), duration: 1.7.2014 – 30.6.2017
 - L2-5571 New materials for printed sensors and indicators and their integration in smart printed matter (head: KI, Marta Klanjšek Gunde), duration: 1.8.2013 – 31.7.2016
 - L1-5453 Development of novel bioresistant and stainfree stone surfaces (head: ZAG, Alenka Mauko), duration: 1.8.2013 – 31.7.2016
 - L1-5451 Evaluating geological sequestration of CO₂ in low rank coals; Velenje basin, Slovenia as a natural analogue (head: IJS, Tjaša Kanduč), duration: 1.8.2013 – 31.7.2016
 - L2-5486 Biomedical shape memory alloys (head: UM FS, Rebeka Rudolf), duration: 1.8.2013 – 31.7.2016
 - L2-4183 Friction stir welding and processing of aluminium alloys (head: UL FS, Janez Tušek), duration 1.7.2011 – 30.6.2014
 - J7-4208 Microbiological and structural investigations of biologically damaged textiles from Slovenian museums (head: UL BF, Polona Zalar), duration: 1.7.2011 – 30.6.2014
 - J6-4016 The adaptation patterns of human activities to the environmental changes after Last Glacial Maximum in Slovenia (head: UL FF, Dušan Plut), duration: 1.7.2011 – 30.6.2014
 - L2-4099 Protected permanent magnets for advanced high-temperature applications (head: IJS, Paul McGuinness), duration: 1.7.2011 – 30.6.2014
 - J1-4167 Twinning, epitaxy and phase transformations in minerals (head: IJS, Nina Daneu), duration: 1.7.2011 – 30.6.2014
 - L2-4066 Petrology of brown (low-rank) coals as mined and/or used in Slovenia, natural gasses in them and their gas-sorption properties (head: GoeZS, Miloš Markič), duration: 1.7.2011 – 30.6.2014
 - L1-4311 Sediments in aquatic environments: their geochemical and mineralogical characterisation, remediation and use as secondary raw materials (head: ZAG, Ana Mladenovič), duration: 1.7.2011 – 30.6.2014
 - V4-1138 Introduction of alternative crops with high content of polyunsaturated fatty acids in the crop rotation, functional use of seeds, oil and secondary products in Slovenia (head: IHPS, Barbara Čeh), duration: 1.10.2011 – 30.9.2014

More info: <http://www.sicris.si/search/org.aspx?opt=4&lang=slv&id=768>

3 ARRS young researches+

- Matjaž Berčič (Department of Materials and Metallurgy, mentor Goran Kugler), duration: 1.12.2014 – 31.5.2018
- Teja Čeru (Department of Mining and Geotechnology, mentor Andrej Gosar), duration: 1.11.2014 – 30.4.2018
- Danijela Klemenčič (Department of Textiles, Graphic Arts and Design, mentor Barbara Simončič), duration: 1.10.2009 – 30.9.2014
- Darja Komar (Department of Geology, mentor Tadej Dolenc), duration: 1.11.2011 – 30.4.2015
- Alenka Šalej Lah (Department of Materials and Metallurgy, mentor Peter Fajfar), duration: 1.10.2008 – 16.8.2014
- Nina Špička (Department of Textiles, Graphic Arts and Design, mentor Petra Forte Tavčer), duration: 1.11.2010 – 17.8.2014
- Anja Torkar (Department of Geology, mentor Mihael Brenčič), duration: 1.11.2010 – 30.4.2015
- Jelena Vasiljević (Department of Textiles, Graphic Arts and Design, mentor Barbara Simončič), duration:

1.11.2011 – 30.4.2015

- Marjana Zajc (Department of Mining and Geotechnology, mentor Andrej Gosar), duration: 1.11.2010 – 30.4.2015
- Lea Žibret (Department of Geology, mentor Marko Vrabec), duration: 1.10.2009 – 21.3.2015

4 EU projects+

UL NTF as partner:

- IPA Adriatic Cross-border Cooperation Programme 2007-2013; DRINKADRIA: Networking for Safe Drinking Water Supply in Adriatic Region, duration: 1.12.2013 – 31.3.2016.
<http://www.drinkadria.eu/>
- Programme of Goal III: European transnational territorial cooperation; CC-WARE: Mitigating Vulnerability of Water Resources under Climate Change, Document reg. no. INTRA-5107506, duration: 1.12.2012 – 31.12.2014.
<http://www.ccware.eu/>
- Programme of Goal III: European transnational territorial cooperation; EcoPaperLoop: Eco Design for the Enhancement of Central Europe Paper Based Products Recycling Loop, duration: 1.9.2012 – 31.12.2014
<http://www.ecopaperloop.eu/>
- TEMPUS; BAEKTEL: Blending academic and entrepreneurial knowledge in technology enhanced learning, duration: 1.12.2013 – 30.11.2016
<http://www.baektel.eu/>
- Erasmus+ Programme: Knowledge Alliance; TECLLO: Future textile and clothing managers for export, marketing, innovation, sustainability and entrepreneurship oriented companies, duration: 2015 – 2017

5 International projects and cooperation+

IGCP projects in 2014 (MIZŠ – UNESCO office)

- PROJECT IGCP 594: Impact of Mining on the Environment in Africa (head at UL NTF: Tadej Dolenc)
- PROJECT IGCP 699: Metallogenesis of the Tethys (head at UL NTF: Tadej Dolenc)
- PROJECT IGCP 610: From the Caspian to Mediterranean: Environmental Change and Human Response during the Quaternary (head at UL NTF: Tadej Dolenc)
- PROJECT IGCP 567: Earthquake Archaeology (head at UL NTF: Nina Zupančič)

Bilateral cooperation

- BI-RS/14-15-23: Thermodynamic analysis and phase equilibria investigation of some low-temperature alloys in the Zn-Al-Sn-Ga-In system (head at UL NTF: Jožef Medved), duration: 2014-2015
- BI-RS/14-15-37: Visualisation and monitoring of transport systems in mining with 3D laser scanner (head at UL NTF: Milivoj Vulić), duration: 2014-2015
- BI-RS/14-15-38: Tailoring innovative functional textiles using plasma and microcapsules (head at UL NTF: Marija Gorjanc), duration: 2014-2015
- BI-RS/14-15-39: Implementation of LCA method as a tool for quality improvement of products and processes (head at UL NTF: Borut Kosec), duration: 2014-2015

- BI-RS/14-15-40: Development of a method for using commercial digital camera as color measurement device (head at UL NTF: Aleš Hladnik), duration: 2014-2015
- BI-HR/14-15-014: Vpliv ekoloških parametrov in radionuklidov na aktivnost encimov ogljikove anhidraze, proces biomineralizacije in stabilni izotopi v tkivu in lupinah morskih ter sladkovodnih školjk *Mytilus galloprovincialis* (Lamarck, 1819) in *Unio crassus* (Philippson, 1788) (Slovenian) (head at UL NTF: Matej Dolenc), duration: 2014-2015
- BI-HR/14-15-027: Modifikacija tekstilij s plazmo in nanodelci za razvoj zaščitnih in medicinskih tekstilij (Slovenian) (head at UL NTF: Marija Gorjanc), duration: 2014-2015
- BI-ME/14-15-012: Nove korozijsko odporne in lahke aluminijeve zlitine utrjene s kvazikristali (Slovenian) (head at UL NTF: Iztok Naglič), duration: 2014-2015
- BI-RU/14-15-040: Environmental isotopes in snow hydrology (participator at UL NTF: Mihael Brenčič), duration: 2014-2015
- BI-RU/14-15-37: Spatial structure of the polymer systems on the base of the porous volume (hydrogels) and two-scale (films) matrices, their functional and mechanical properties (head at UL NTF: Tatjana Rijavec), duration: 2014-2015
- BI-BA/14-15-033: Raziskava možnosti uporabe kratkih lanenih vlaken za izdelavo filtrov za sorpcijo ionov težkih kovin iz vodnih raztopin (Slovenian) (head at UL NTF: Marija Gorjanc), duration: 2014-2015
- BI-BA/14-15-015: Dvig kakovosti proizvodov, procesov in storitev z uporabo metode vrednotenja življenjskega cikla (LCA) (Slovenian) (head at UL NTF: Borut Kosec), duration: 2014-2015
- BI-UA/13-14-006: Research of Braille application technology and design of software-hardware application for evaluation of its reproduction quality (head at UL NTF: Sabina Bračko), duration: 2013-2014

COST actions

- COST Action TU1208: Civil Engineering Applications of Ground Penetrating Radar (Andrej Gosar, UL NTF), duration: 4.4.2013 – 3.4.2017.
http://www.cost.eu/domains_actions/tud/Actions/TU1208
- COST Action FP1104: New possibilities for print media and packaging – combining print with digital bio-based materials for new packaging applications (Tadeja Muck, UL NTF), duration: 25.5.2012 – 21.5.2016.
http://www.cost.eu/domains_actions/fps/Actions/FP1104
- COST Action MP1105: Sustainable flame retardancy for textiles and related materials based on nanoparticles substituting conventional chemicals (FLARETEX) (Barbara Simončič, Petra Forte Tavčer, UL NTF), duration: 23.5.2012 – 22.5.2016.
http://www.cost.eu/domains_actions/mpns/Actions/MP1105
- COST Action MP1101: Biomedical applications of atmospheric pressure plasma technology (Urška Vrabič Brodnjak, UL NTF), duration: 12.06.2011 – 10.10.2015.
http://www.cost.eu/domains_actions/mpns/Actions/MP1101
- COST Action TU1202: Impact of climate change on engineered slopes for infrastructure (Mihael Brenčič, UL NTF), duration: 4.10.2012 – 3.10.2016.
http://www.cost.eu/domains_actions/tud/Actions/TU1202
- COST Action FP1003: Impact of renewable materials in packaging for sustainability-development of

renewable fibre and bio-based materials for new packaging applications (BioMatPack) (Tadeja Muck, UL NTF),
duration: 20.10.2010 – 8.12.2014.

http://www.cost.eu/domains_actions/fps/Actions/FP1003

- CMST COST Action TD0903: Understanding and manipulating enzymatic and proteomic processes in
biomineralisation (Tadej Dolenc, UL NTF), duration: 17.11.2009 – 16.5.2014

http://www.cost.eu/domains_actions/cmst/Actions/TD0903

Dostopnost

- COST Action ES1404: A European network for a harmonised monitoring of snow for the benefit of climate
change scenarios, hydrology and numerical weather prediction (Mihael Brenčič, UL NTF), duration: 11. 2014 –
2018
- http://www.cost.eu/COST_Actions/essem/Actions/ES1404

- Other research projects+

Major projects in 2014

- Public call for cultural projects Emona 2000 financed by the City Council of the City of Ljubljana (MOL) in
2014: Emonska oblačila nekoč in danes (Slovenian) (head at UL, NTF: Almira Sadar)



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