REGISTRATION FORM FOR CZECH SCIENTIFIC INSTITUTION

1. Research institution data (name and address):

University of Chemistry and Technology in Prague
Technická 5
166 28 Prague 6
VAT: CZ60461373

2. Type of research institution: Public university (veřejná vysoká škola)

3. Head of the institution: prof. Dr. RNDr. Pavel Matějka

4. Contact information of designated person(s) for applicants:

Anna Knaislová – specialist of project centre
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University of Chemistry and Technology, Prague
Technická 5, 166 28 Prague 6 — Dejvice

5. Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre:

Natural Sciences and Technology: *Physical and analytical chemical sciences* - physical chemistry/chemical physics, theoretical chemistry, analytical chemistry, inorganic chemistry, organic chemistry, method development

6. Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, or other results:

Patents:

Patent WO2021164797A1 — *Device and method for preparation of liquid marbles*

Patent WO2020200337A1 — *Method of production of a composite of yeast-derived beta glucan particle with incorporated poorly-water-soluble low-molecular-weight compound, pharmaceutical preparation and use thereof*

Patent WO2019129316A1 - *Secondary battery cell for electromobiles, containing solid amorphous glass materials and nano/micro materials*

Patent WO2018228618A1 — *Method of producing compounds of lithium and optionally of other alkali metals*

Patent WO2018206126A1 — *Imaging agents and methods*

Patent WO2018082723A1— *Aminooxylipids for the construction of self-assembling liposomal systems enabling their subsequent modification by biologically functional molecules*

Patent WO2017148454A1 — *Photoactivatable nanoparticles for photodynamic applications, method of preparation thereof, pharmaceutical compositions containing them, and use thereof*

Patent EP3660002B1 — *Method for isolating caprolactam from the upper lactam phase comprising the steps of 1) distillation, 2) refining with hydrogen in the presence of a nobel metal catalyst and 3) rectification*

Patent DE202020107034U1— *Glass melting furnace with conversion area for converting glass batches*

Patent DE202018105160U1 — *Melting chamber of a continuous glass melting furnace and glass melt obtained by a process carried out therein*

Plus 144 Czech patents

Publications:

Macak: Self-organized TiO2 nanotube layers as highly efficient photocatalysts, Small, 3(2), 2007

Pumera: Layered transition metal dichalcogenides for electrochemical energy generation and storage, Journal of Materials Chemistry A, 2(24), 2014

Pumera: 2D Monoelemental Arsenene, Antimonene, and Bismuthene: Beyond Black Phosphorus, Advanced Materials, 29(21), 2017

Lhotak: Chemistry of thiacalixarenes, European Journal of Organic Chemistry, 8, 2004

Vojtech: Mechanical and corrosion properties of newly developed biodegradable Zn-based alloys for bone fixation, Acta Biomaterialia, 7(9), 2011

Hajslova: Challenging applications offered by direct analysis in real time (DART) in food-quality and safety analysis, Trac-Trends in Analytical Chemistry, 30(2), 2011

Zivcova: Thermal conductivity of porous alumina ceramics prepared using starch as a pore-forming agent, Journal of the European Ceramic Society, 29(3), 2009

7. List of no more than 3 important research projects in the selected discipline awarded in national and international calls to the institution in the last 5 years:

MSCA-IF-2016 - MARVEL (748683) - ***Novel MAterial and Process Design for ReVerse Electrodialysis-Water ELectrolysis Energy System***

European Commission Horizon 2020 - H2020-EU.1.3.2.

€ 142 720,80 (2017 — 2019)

EU Operational Programme (ID EF16_025/0007445) – ***Organic redox couple based batteries for energetics of traditional and renewable resources***

Ministry of Education, Youth and Sports (MŠMT)

CZK 54,549,000 (2018 — 2022)

Grant projects of excellence in basic research EXPRO (ID GX19-26127X) — ***The robotic nano-pharmacist: Next-generation manufacturing processes for personalised therapeutic agents***

Czech Science Foundation

CZK 48,190,000 (2019 – 2023)

8. Description of the available laboratory and office space for a Dioscuri Centre:

Within UCT Prague there are four faculties pursuing activities within the area of R&D&I:

Faculty of Chemical Technology

Faculty of Environmental Protection Technology

Faculty of Food and Biochemical Technology

Faculty of Chemical Engineering

They are further divided into individual institutes.

The second campus is located in Kralupy nad Vltavou, also known as Technopark Kralupy Institute.

UCT Prague in numbers:

2 Campuses

4 Buildings

25 Floors

2232 Rooms (laboratories, offices, lecture halls, etc.)

In the year 2021 was finished reconstruction of laboratories of doctoral students in accordance with the requirements for quality teaching and safety of work, and renewal or acquisition of new apparatus and equipment devices in the scientific-research laboratories of doctoral students, and other supporting equipment was acquired from the EU Operational Programme (ID EF16_017/0002654) Infrastructure for modern doctoral studies at UCT Prague. Recognised costs CZK 164,389,000.

9. List of the available research equipment for a Dioscuri Centre:

UCT Prague - high value equipment at workplaces worth over 2 million CZK:

LYRA3 GMH scanning electron microscope

JEOL JEM 2200FS transmission electron microscope

3D structural illumination microscope OMX V4 BLAZE SYST

LC-MS system for proteomics and genomics

D8 VENTURE single crystal diffractometer with X-ray lamp

Combined electron and ion microscope FIB with accessories

IMS—QTOF spectrometer for metabolomics studies

neaSNOM system for scanning optical microscopy

Confocal fluorescence microscope with 3D image

GCxGC FIF / MS 2-dimensional gas chromatograph

MALDI based mass spectrometer

AFM-RAMAN TERS system - microspectrometer

NMR spectrometer 500 MHz nuclear magnetic resonance

MonoVista Macro Raman spectrometer

HPLC / SFC system for preparative enantioseparations

ROA spectrometer ChiralRAMAN 2X

THz spectrometer TPS Flextra 300

Raman ROA microscope

GC / UHRTOF gas chromatograph with mass detector

Nicolet iS50 FTIR spectrometer with FTIR microscope iN10

Chiral IR-2X VCD spectrometer

MicroCal VP-iTC isothermal titration microcalorimeter

P / ACE MOQ capillary electrophoresis

ZETA NANO-ZS equipment for colloids

10. List of the additional benefits (other than listed in the conditions for hosting a DC, see invitation) that the Institution declares to provide for a Dioscuri Centre (i.e.: additional funds, personal benefits, dual career options, relocation support or other):

Motivation scheme: Support for applicants in joining international research and innovation projects:

UCT Prague's support for future beneficiaries in joining international research and innovation projects is primarily aimed at first-time applicants or applicants who have not succeeded with their application yet, in order to increase their participation in projects executed by international consortia or in ERC projects. The purpose of this scheme is to motivate potential applicants who have not submitted any proposal to Horizon 2020/Horizon Europe or similar programmes or have not been successful with such proposal, to try and find an appropriate call and partners to submit a joint project proposal. This scheme allows applicants to receive financial support of up to 49 000 CZK to cover travel costs or consultation services linked with preparation of international project proposals.

Support of short-term hosting of renowned foreign experts:

Hosting foreign experts is one of the measures, which, in accordance with the Strategic Intent, we aim to support the development of global competencies of students and staff of the UCT Prague. The call is intended for the departments of the UCT Prague and aims to financially support the hosting of foreign experts from partner institutions at the UCT Prague. Thanks to the support of teaching stays directly on the campus or the distance involvement of a foreign expert, students and employees will get a unique opportunity to participate in lessons led by foreign teachers and experts without having to leave the UCT Prague campus and draw on professional and pedagogical knowledge and skills of renowned foreign experts. The benefit of the activity can also be the development of existing and the creation of new contacts for future cooperation in various areas of pedagogical, but also related scientific research activities with opportunities for participation in international projects that will increase the prestige and competitiveness of UCT Prague. The applicant (head of the research group or head of the UCT Prague Department) will receive a support of up to CZK 40.000 (including VAT of 21%) for expenses related to the hosting of a foreign expert, to ensure online hosting of a foreign expert a support of up to CZK 25.000 (including VAT of 2 l%).

Internal grant agency: In addition to grants for doctoral students (student scientific project; student social project), the university offers pedagogical project of the students and academics and Starting grants - Dagmar Procházková Fund. The UCT Prague established the Dagmar Procházková Fund to support scientific projects of academic workers with international experience from whom it can be expected that they will continue their professional career at UCT Prague.

Overview of employee benefits:

Meal allowance, Accommodation in recreational facilities of the UCT Prague at discounted prices, Pension Insurance, Kindergarten for children of employees, Language courses

11. Other information about the internationalization of the research institution, international researchers employed at the institution, the availability of English language seminars etc.:

A wide range of lectures related to the R&D&I field are delivered by foreign scientists and experts.

Projects with direct impact on the internationalization of the UCT Prague:

Programme INTER-EXCELLENCE (LTI17009) - ***International Projects Support Centre Dejvice and ANLUPA*** — CZK 6,865,000 (2020 — 2023)

Programme INTER-EXCELLENCE (LTI20003) - ***Guidelines to Administrative Issues for International Workers in the Academic Environment –*** CZK 2,321,000 (2020 — 2021)

Programme INTER-EXCELLENCE (LTI20005) - ***Support office for international projects and foreign researchers' integration in the Czech Republic, complemented by information platform supporting innovation in food sector (KOMPAS) –*** CZK 6,865,000 (2020 — 2023)

UCT Prague supports the internationalisation of its research by providing 40 postdoc fellowships for international early-career researchers under the EU Operational Programs:

EF16_027/0008351 - ChemJets UCT Prague

EF18_053/0016974 - ChemJets2

EF17_050/0008485 - Chemical Fellows for UCT Prague

EF18_070/0010465 - CHEMFELLS II

EF19_074/0014006 - CHEMFELLS III

EF20_079/0017899 - CHEMFELLS IV

with the total support of **CZK 119MM+** (2018-2023). These programs contribute to the internationalisation of UCT Prague by welcoming and integrating foreign researchers, and stimulate international knowledge transfer throughout all faculties. The success of these programs has been very encouraging, and we are looking forward to participating in further calls in the future.