Number of university sustainability program(s) with international collaborations



EMINReM

The Project “Master Program in Eco-Mining Engineering and Innovative Natural Resources Management”



Cooperative Research Agreement

THIS AGREEMENT produces retroactive effects from May 01, 2024 by and between Korea Research Institute of Chemical Technology, whose place of business is situated at 141 Gajeongro, Yuseong-gu, Daejeon, the Republic of Korea 34114 (hereinafter "KRICT"), and **(Navoi State University of Mining and Technologies)**, has a place of business at **(Galaba Ave. 76v, Navoi, Navoi Region, Uzbekistan, 210100)** (hereinafter "PERFORMER"). Together hereinafter referred to as the "Parties"

Article 1 (Purpose and Details)

The purpose and details of this cooperative research agreement (hereinafter referred to as "the Cooperative Research" or "the Research") are related to performing a Project entitled as the **(Development of synthetic methods for the preparation of high-value zeolites Ca-A 5A and 13X molecular sieves from local kaolinite for natural gas purification)**" (the "Project") shown in the annexed Cooperative Research Project Plan (hereinafter referred to as "the Project Plan") which is proposed by PERFORMER in agreement with KRICT. This Project is financially supported to perform the "Project for Capacity Building of the Center of Chemical Technology (UzCCT) by the Korea International Cooperation Agency (KOICA).

Article 2 (Performance)

PERFORMER shall perform the Cooperative Research within the scope of Cooperative Research Fund set forth in Article 3 (hereinafter referred to as "the Fund") in accordance with the details of the Project Plan in Annex A. The Project will be performed by Principal Investigator of the Cooperative Research.

Article 3 (Payment and use of the Research Fund)

(1) This is fixed fund agreement. For the purpose of performing the Cooperative Research, KRICT shall pay 100% of the total Research Fund KRW 30,000,000 to PERFORMER upon the request of PERFORMER within thirty (30) working days from its receipt of an invoice. This total Research Fund of KRW 30,000,000 includes 10% of value-added tax, which will be deducted from the total amount that PERFORMER will receive.

(2) PERFORMER shall set aside the Fund of the year from the funds for other uses and separately manage it to ensure not to use the Fund for other than the intended purpose. Also, PERFORMER shall separately manage documents that can confirm the expenditures of the Fund.

(3) PERFORMER shall obtain approval from KRICT for any of the following occur: change of the Principal Investigator of PERFORMER, the research period or any other circumstances established in this agreement.

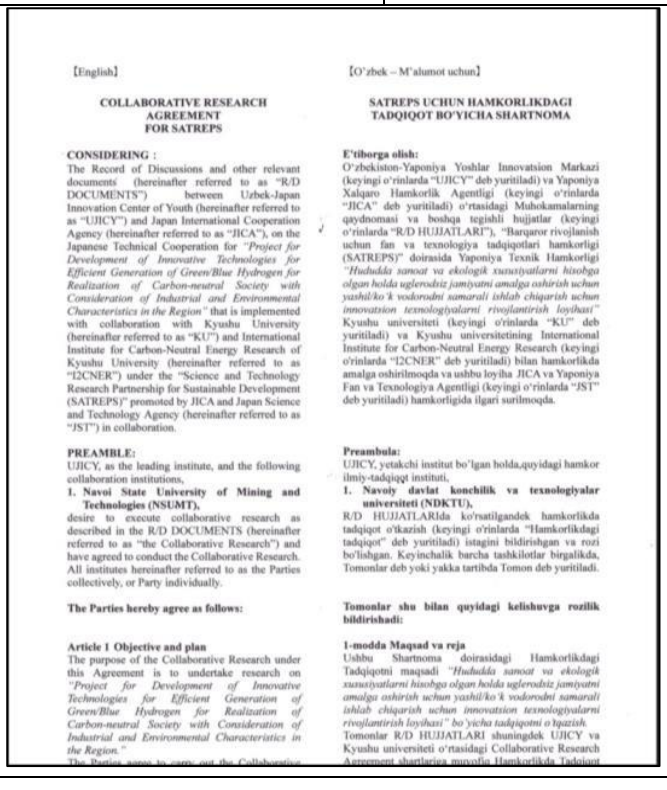
(4) PERFORMER shall not change and use the research allowances itemized under direct cost, or indirect costs by increasing them.

(5) Payments must be made by KRICT to PERFORMER, via wire transfer to the bank details mentioned on the invoices.

Article 4 (Settlement of the Fund)

PERFORMER, through Principal Investigator of PERFORMER, shall submit to KRICT the PERFORMER's standard Project Interim report, which provides Fund Expenditure Report within sixty (60) working days after completion of the project.

Development of synthetic methods for the preparation of high-value zeolites Ca-A-5A and 13X molecular sieves from local kaolinite for natural gas purification



【English】

COLLABORATIVE RESEARCH AGREEMENT FOR SATREPS

CONSIDERING :
The Record of Discussions and other relevant documents (hereinafter referred to as "R/D DOCUMENTS") between Uzbek-Japan Innovation Center of Youth (hereinafter referred to as "UJICY") and Japan International Cooperation Agency (hereinafter referred to as "JICA"), on the Japanese Technical Cooperation for *"Project for Development of Innovative Technologies for Efficient Generation of Green/Blue Hydrogen for Realization of Carbon-neutral Society with Consideration of Industrial and Environmental Characteristics in the Region"* that is implemented with collaboration with Kyushu University (hereinafter referred to as "KU") and International Institute for Carbon-Neutral Energy Research of Kyushu University (hereinafter referred to as "I2CNER") under the "Science and Technology Research Partnership for Sustainable Development (SATREPS)" promoted by JICA and Japan Science and Technology Agency (hereinafter referred to as "JST") in collaboration.

PREAMBLE:
UJICY, as the leading institute, and the following collaboration institutions,
1. Navoi State University of Mining and Technologies (NSUMT),
desire to execute collaborative research as described in the R/D DOCUMENTS (hereinafter referred to as "the Collaborative Research") and have agreed to conduct the Collaborative Research. All institutes hereinafter referred to as the Parties collectively, or Party individually.

The Parties hereby agree as follows:

Article 1 Objective and plan
The purpose of the Collaborative Research under this Agreement is to undertake research on *"Project for Development of Innovative Technologies for Efficient Generation of Green/Blue Hydrogen for Realization of Carbon-neutral Society with Consideration of Industrial and Environmental Characteristics in the Region."*

【O'zbek – M'alumot uchun】

SATREPS UCHUN HAMKORLIKDAGI TADQIQOT BO'YICHA SHARTNOMA

E'tiborga olish:
O'zbekiston-Yaponiya Yoshlar Innovatsion Markazi (keyingi o'rinlarda "UJICY" deb yuritiladi) va Yaponiya Xalqaro Hamkorlik Agentligi (keyingi o'rinlarda "JICA" deb yuritiladi) o'rtasidagi Muhokamalarning qaydnomasi va boshqa tegishli hujjatlar (keyingi o'rinlarda "R/D HUJJATLARI"), "Barqaror rivojlanish uchun fan va texnologiya tadqiqotlari hamkorligi (SATREPS)" doirasida Yaponiya Texnik Hamkorligi *"Hududda sanoat va ekologik xususiyatlarni hisobga olgan holda uglerodsiz jamiyatni amalga oshirish uchun yashil/ko'k vodorodni samarali ishlab chiqarish uchun innovatsion texnologiyalarni rivojlantirish loyihasi"* Kyushu universiteti (keyingi o'rinlarda "KU" deb yuritiladi) va Kyushu universitetining International Institute for Carbon-Neutral Energy Research (keyingi o'rinlarda "I2CNER" deb yuritiladi) bilan hamkorlikda amalga oshirilmoqda va ushbu loyiha JICA va Yaponiya Fan va Texnologiya Agentligi (keyingi o'rinlarda "JST" deb yuritiladi) hamkorligida ilgari surilmoqda.

Preambula:
UJICY, yetakchi institut bo'lgan holda,quyidagi hamkor ilmiy-tadqiqqt instituti,
1. Navoiy davlat konchilik va texnologiyalar universiteti (NDKTU),
R/D HUJJATLARIda ko'rsatilgandek hamkorlikda tadqiqot o'tkazish (keyingi o'rinlarda "Hamkorlikdagi tadqiqot" deb yuritiladi) istagini bildirishgan va rozi bo'lishgan. Keyinchalik barcha tashkilotlar birgalikda, Tomonlar deb yoki yakka tartibda Tomon deb yuritiladi.

Tomonlar shu bilan quyidagi kelishuvga rozilik bildirishadi:

1-modda Maqsad va reja
Ushbu Shartnoma doirasidagi Hamkorlikdagi Tadqiqotni maqsadi *"Hududda sanoat va ekologik xususiyatlarni hisobga olgan holda uglerodsiz jamiyatni amalga oshirish uchun yashil/ko'k vodorodni samarali ishlab chiqarish uchun innovatsion texnologiyalarni rivojlantirish loyihasi" bo'yicha tadqiqotni o'tqazish.*
Tomonlar R/D HUJJATLARI shuningdek UJICY va Kyushu universiteti o'rtasidagi Collaborative Research

The Project for Development of Innovative Technologies for Efficient Generation of Green/Blue Hydrogen for Realization of Carbon-neutral Society with Consideration of Industrial and Environmental Characteristics

Description:

1. The Project "Master Program in Eco-Mining Engineering and Innovative Natural Resources Management (EMINReM)"

Wider Objective is to raise efficiency and ecological sustainability of mining works realization through the Partner-HEIs collaboration for training of new-generation-experts within environmental, economic and management attainments in the field of natural resources extraction and processing. It is aimed at development of the future experts` interdisciplinary openness, capability of understanding technological issues in a systematic and in-depth way, using the tools of modeling and evaluation of potential environmental risks, mitigating them in our fast-developing world. MP in EMINReM is created in response to the current challenges of sustainable development and market needs.

2. The Project for the Development of synthetic methods for the preparation of high-value zeolites Ca-A-5A and 13X molecular sieves from local kaolinite for natural gas purification

I. Research Goals and Contents:

- Research Goals-Development of zeolite molecular sieve synthesis method for natural gas separation form kaolinite. The porous materials will be applied as adsorbents for natural gas separation;
- Research Contents-Uzbekistan kaolinite analysis, and selection for raw materials. Establishment of a zeolite synthesis system Uzbekistan;
- Expected Outputs-Selection of candidates for kaolinite raw materials;
- Others.

II. Responsibilities:

a. KRICT's Responsibilities: Establish CH/CO, adsorption measurement, and breakthrough system feed from CH/CO;

b. Partner's Responsibilities: Establish zeolite synthetic devices in Navoi State University of Mining and Technologies. Analysis of possible candidates for local chaolite, which can be used as zeolite synthesis (CnA. X zeolite).

III. Research Schedule

a. Tasks:

- Analysis of local kaolinite, and select the possible candidate for zeolite synthesis. Set up zeolite synthetic system in Navoi State University of Mining and Technologies Set up adsorption and separation system for CHa/CO.

b. Outputs *(Milestones)*;

- Development of zeolite synthetic method form local kaolinite to yield a Ca-A and 13X molecular sieves.

3. The Project for Development of Innovative Technologies for Efficient Generation of Green/Blue Hydrogen for Realization of Carbon-neutral Society with Consideration of Industrial and Environmental Characteristics

Within the framework of the project funded by Japan's Science and Technology Research Partnership for Sustainable Development (SATREPS), titled "Development of Innovative Technologies for the Efficient Production of Green/Blue Hydrogen to Achieve a Carbon-Free Society, Considering the Industrial and Environmental Characteristics of the Region," the following modern technologies are being studied by NSUMT scientists in Kyushu University laboratories:

- using unused land (deserts, steppes) and solar energy for electricity generation to produce hydrogen via electrolysis and green hydrogen production.
- producing blue hydrogen from residual oil in oil fields.
- producing green hydrogen through high-efficiency steam electrolysis powered by solar panels and utilizing solar heat as a heat source (also using waste heat and steam from Navoi's LNG combined power station, among others).

4. Training young resource information researchers by establishing a reserch and education center for sustainable resource development in countries with economies in transition

Since April 2021, a grant project funded by the Japan Society for the Promotion of Science (JSPS) titled "Establishment of a Research and Education Center to Enhance the Potential of Young Researchers in Sustainable Resource Development in Central Asian Countries" has been underway. As part of the project, scientific internships are organized for professors, doctoral students, and students of Akita University and Navoi State Mining and Technology University. These include summer schools in Japan, and scientific internships in Akita and Navoi. In 2022-2023, 17 students from Japan participated in an academic exchange program at NSUMT, while 4 students and 3 professors from NSUMT completed internships at Akita University.