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**KHALIFA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**and**

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH [IISER] KOLKATA**

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**FUNDED RESEARCH AWARD AGREEMENT**

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## FUNDED RESEARCH AWARD AGREEMENT

**THIS FUNDED RESEARCH AWARD AGREEMENT ("Agreement") IS DATED 1 JULY 2022 ("EFFECTIVE DATE") BY AND BETWEEN:**

**KHALIFA UNIVERSITY OF SCIENCE AND TECHNOLOGY**, an independent legal entity established by Law number (5) for the year 2017, as amended, having its place of business in the UAE Emirate of Abu Dhabi, P.O. Box 127788 ("**Khalifa University**");

and

**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH [IISER] KOLKATA**, and independent autonomous institution established by the Ministry of Human Resource Development (MHRD), Government of India, in 2006 ("**Partner**");

hereinafter referred to individually as a "Party" or jointly as the "Parties".

WHEREAS:

- A. To further its research mission, Khalifa University has awarded a Competitive Internal Research Award ("CIRA") for the research project entitled, "***Next generation porous conducting polymers/frameworks for efficient reverse electrochemical desalination***," further details of which are contained in Schedule 3 to this Agreement (the "Research Project").
- B. As part of the CIRA, Khalifa University has made an award to the Partner to support certain scientific and technical aspects of the Research Project (the "Award").
- C. The Partner issued a Letter of Commitment to commit funding (cash and/or in-kind) and support for the Research Project as part of the initial project proposal submission process.
- D. The Parties hereby confirm their intention to regulate their rights and obligations arising from the award in accordance with the following terms and conditions.

**NOW THEREFORE:** The Parties hereby agree as follows:

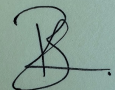
### 1. DEFINITIONS

When used in this Agreement, the following terms are deemed to have the meanings set forth for them in this Clause 1:

"Affiliate"	means (i) an organization that directly or indirectly controls a Party; or (ii) an organization that is directly or indirectly controlled by a Party; or (iii) an organization that is controlled, directly or indirectly, by the ultimate parent company of a Party;
"Background IP"	means data, designs, drawings, reports, specifications, procedures, instructions, know-how, software, inventions, other technical information of any kind and Intellectual Property made available by either of the Parties for use in the Research Project and developed prior to the date of this Agreement, or developed during the Agreement but independently from the Research Project;

"Confidential Information"	means confidential and proprietary information of any kind which is disclosed by either Party pertaining to the Research Project (including Background IP and results arising from the Research Project);
"Foreground IP"	means data, designs, drawings, reports, specifications, procedures, instructions, know-how, software, inventions, other technical information of any kind and Intellectual Property that is invented or developed in the performance of the Research Project by either of the Parties;
"In-Kind Contribution"	means non-monetary assets contributed by a Party to carry out the Research Project including, by way of example but not exclusively, time contributed by research or technical personnel, equipment usage, materials, data, facilities or other identifiable assets;
"Intellectual Property"	means patents, utility models, registered or unregistered design rights, trade secrets, database rights, know how, trademarks and/or copyright, together with any applications for the foregoing;
"IP Management Agreement"	means an agreement to be negotiated and executed in good faith by the Parties to govern the conditions by which Joint IP will be managed between the Parties and shall address, among other things, which Party will lead protection and commercialization activities, each Party's right to use and exploit the Joint IP and the sharing of costs and revenues derived from the protection and commercialization of the Joint IP;
"Joint IP"	means data, designs, drawings, reports, specifications, procedures, instructions, know-how, software, inventions, other technical information of any kind and Intellectual Property, which is jointly invented or jointly developed in the performance of the Research Project by Khalifa University and the Partner;
"Khalifa University Principal Investigator"	means <b>Dr. Dinesh Shetty</b> , an employee of Khalifa University;
"Letter of Commitment"	means the templated letter of support from the Partner, detailing the funds requested and In-Kind Contribution to be committed by the Partner to the Research Project, a copy of which is annexed as Schedule 2 to this Agreement;
"Partner Principal Investigator"	means <b>Dr. Rahul Banerjee</b> , an employee of the Partner;
"Period"	means the period of forty-one (41) months;
"Schedule"	means the schedule in three (3) parts, annexed hereto;
"Start Date"	means <b>1 July 2022</b>

## 2. The Research Project

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	SC	OKN

- 2.1 The Partner shall use reasonable endeavours to carry out the tasks allotted to it in the Research Project. Notwithstanding the foregoing, the Partner does not undertake that any research shall lead to any particular result, nor does it guarantee a successful outcome to the Research Project.
- 2.2 The Partner shall obtain and maintain all regulatory and ethical licences, insurances, consents and approvals necessary to allow it to carry out the tasks allotted to it in the Research Project and shall carry out the tasks allotted to it in the Research Project in accordance with all laws and regulations that apply to its activities under, or pursuant to, this Agreement. For the avoidance of doubt, the Partner shall not commence any tasks allotted to it the Research Project until ethical approval has been granted, if ethical approval is required.
- 2.3 The Partner hereby agrees to disclose promptly to Khalifa University all results that it may conceive or first reduce to practice that are wholly, or in part, based upon or derived from the implementation of the Research Project.

### 3. Reports

- 3.1. The Khalifa University Principal Investigator and Partner Principal Investigator shall prepare joint reports during the Period, to be submitted by the Khalifa University Principal Investigator to the Khalifa University "University Sponsored Research" as per Schedule 1.
- 3.2. Save for the first payment of the Award, payable upon execution of this Agreement, only reports submitted by the Khalifa University Principal Investigator containing Khalifa University and Partner contributions shall be deemed valid to effect the payment of a Partner invoice.

### 4. The Award and Payments

- 4.1. The total amount of the Award to the Partner for the Research Project is **AED185,000.00** (one hundred eighty-five thousand UAE dirhams only), payable in accordance with the payment schedule detailed in Schedule 1 to this Agreement.
- 4.2. Invoices shall be sent by the Partner as per Schedule 1 to this Agreement via email ([internalfunding@ku.ac.ae](mailto:internalfunding@ku.ac.ae)) to the Khalifa University "University Sponsored Research", quoting CIRA project reference CIRA-2021-022/8474000405. Payment shall be made to the Partner within ninety (90) days of receipt of the corresponding report submitted jointly by the Khalifa University Principal Investigator and the Partner Principal Investigator, as referred to in Clause 3.1 above.
- 4.3. All sums are inclusive of any present and future payable taxes, including VAT.

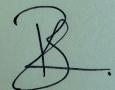
### 5. In-Kind Contribution

The Partner shall provide an In-Kind Contribution towards the cost of the Research Project valued at 25% of the Award. The Partner shall confirm such In-Kind Contribution as part of the invoicing process.

### 6. Award Period

Notwithstanding the date or dates of signature of this Agreement, the Research Project shall commence on the Start Date and, unless earlier terminated in accordance with this Agreement, shall end upon the expiry of the Period. The Period may be modified depending on the progress and success of the Research Project, upon mutual agreement by the Parties.

### 7. Principal Investigators

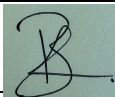
	021-022 / 8474000405	Partner Ref:
	SG	OKN

- 7.1. The Khalifa University Principal Investigator shall have overall responsibility for the management of the Research Project.
- 7.2. If, for any reason, the Khalifa University Principal Investigator is unable to continue to serve as principal investigator a successor shall be named by Khalifa University.
- 7.3. The Partner Principal Investigator shall have responsibility for the management of the Award on behalf of the Partner.
- 7.4. If, for any reason, the Partner Principal Investigator is unable to continue to serve as principal investigator a successor shall be named by the Partner, whose appointment shall be subject to the approval of Khalifa University.

## 8. Intellectual Property

- 8.1. All Background IP used in connection with the Research Project shall remain the property of the Party introducing the same.
- 8.2. Foreground IP shall be vested as follows:
  - 8.2.1. Foreground IP generated solely by Khalifa University shall be owned by Khalifa University;
  - 8.2.2. Foreground IP generated solely by the Partner shall be owned by the Partner;
  - 8.2.3. Joint IP shall be jointly owned by both Parties.
- 8.3. Each Party hereby grants to the other Party:
  - 8.3.1. a non-exclusive, royalty-free, fully paid up license to use results arising from its work on the Research Project solely for the purposes of the Research Project; and
  - 8.3.2. subject to any pre-existing third party rights, a non-exclusive, royalty-free, fully paid up license to use its Background IP solely to enable the other Party to carry out its activities as part of the Research Project.
- 8.4. Where a Party, or the Parties, wish to pursue protection and/or commercialisation of the Joint IP the Parties shall enter into an IP Management Agreement. Khalifa University shall have the first right to lead on protection and/or commercialisation actions.
- 8.5. The Partner hereby grants to Khalifa University:
  - 8.5.1. a non-exclusive, royalty free, fully paid-up perpetual license to Partner Foreground IP for the purposes of academic research and teaching only; and
  - 8.5.2. an exclusive, royalty free, fully paid-up license to Partner Foreground IP, with the right to sub-license for all uses in the United Arab Emirates.

## 9. Confidentiality

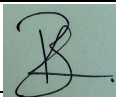
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	SG OKN	

- 9.1. All Confidential Information shall remain confidential to the Parties. The Parties undertake to hold Confidential Information in confidence and not to publish or disclose it in any way other than to persons in their employment who shall likewise be bound by these obligations of confidentiality.
- 9.2. The undertaking in Clause 9.1 above shall not apply to information:
  - 9.2.1. which, at the time of disclosure, has already been published or is otherwise in the public domain other than through breach of the terms of this Agreement;
  - 9.2.2. which, after disclosure to a Party, is subsequently published or comes into the public domain by means other than an action or omission on the part of either Party;
  - 9.2.3. which a Party can demonstrate was known to it or subsequently independently developed by it and not acquired as a result of participation in the Research Project;
  - 9.2.4. lawfully acquired from a third party who did not obtain it from the other Party hereto;
  - 9.2.5. is required to be disclosed to any regulatory authority or court of competent jurisdiction.

## 10. Publications and Publicity

- 10.1. Either Party (the "Publishing Party") shall be free to publish or present articles directly arising from work on the Research Project, after first providing the other Party (the "Receiving Party") with a copy of the proposed article for publication or presentation at least forty-five (45) days' prior to the planned disclosure, in order that the Receiving Party can review each proposed disclosure to identify patentable subject matter and/or any inadvertent disclosure of the Receiving Party's Confidential Information.
- 10.2. The Receiving Party shall have forty-five (45) days in which to review the publication for a disclosure of the Receiving Party's confidential information and for disclosure of any patentable material.
  - 10.2.1. if the Receiving Party believes that the publication contains any confidential information of the Receiving Party it shall so notify the Publishing Party not later than forty-five (45) days after receipt of the publication and the Publishing Party shall not publish such confidential information.
  - 10.2.2. if necessary, at the request of the Receiving Party, the Publishing Party shall delay disclosure by a maximum period of ninety (90) days, to allow the Receiving Party to prepare and file national and foreign patent applications.
- 10.3. All publications or presentations shall contain the following acknowledgment: ***"This [publication / presentation] is based upon work supported by the Khalifa University of Science and Technology under Award No. CIRA-2021-022"***.
- 10.4. Subject to the terms of Clause 9 above, any use of the other Party's name, insignia, trademark or logo in any press release or product advertising, or any promotional purpose or public announcement relating to the Research Project, or the existence or contents of this Agreement, shall first be approved by the other Party; except that either Party may identify the collaboration for its own internal reporting and compliance purposes.
- 10.5. All draft publications under this Clause 10 shall be sent to the following, for review:

For Khalifa University: Director – Technology Management & Innovation

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	SC	OKN

For the Partner: **DEAN RESEARCH AND DEVELOPMENT**  
**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA**  
Mohanpur - 741 246, Dt. Nadia, West Bengal. INDIA  
Phone: +91 33 6136 0060 Email: [md@iiserkol.ac.in](mailto:md@iiserkol.ac.in)

**11. No Warranties and Limitation of Liability**

- 11.1. Neither Party makes to the other any representations or warranties of any kind concerning the Research Project or any Intellectual Property and each hereby disclaims all representations and warranties, express or implied, including, without limitation, warranties of merchantability, fitness for a particular purpose, non-infringement of Intellectual Property of third parties, validity, enforceability and scope of any Intellectual Property or claims, whether issued or pending, and the absence of latent or other defects, whether or not discoverable.
- 11.2. Specifically, and not to limit the foregoing, the Partner makes no warranty or representation: (i) regarding the validity or scope of the Research Project or any Intellectual Property optioned or granted hereunder; and (ii) that the exploitation of the results of the Research Project or any Intellectual Property will not infringe any patents or other Intellectual Property of a third party.
- 11.3. In no event shall either Party, its trustees, directors, officers, employees, students and affiliates, be liable for incidental or consequential damages of any kind, including economic damages or lost profits, regardless of whether the Party was advised, had other reason to know or in fact knew of the possibility of the foregoing. This Clause 11 shall survive the expiration or any earlier termination of this Agreement.

**12. Termination and consequences of termination**

- 12.1. This Agreement may be terminated by either Party upon prior written notice to the other Party without the need to present reasons.
- 12.2. In the event that Khalifa University terminates this Agreement, Khalifa University shall be liable only for direct costs incurred or committed by the Partner and associated with the termination of the Research Project and this Agreement.
- 12.3. In the event that the Partner terminates this Agreement and Khalifa University has paid any of the Award in advance to the Partner, the Partner shall return to Khalifa University any unspent or uncommitted funds, together with official confirmation that the portion being returned has been calculated in good faith and approved by the Partner's duly authorized representative.
- 12.4. This Agreement may also be terminated on the occurrence of any or both of the following events:
- 12.4.1. a Party enters into bankruptcy or liquidation or any other arrangement for the benefit of its creditors; or
- 12.4.2. a Party is in material breach of any of its obligations hereunder which, if it can be remedied remains unremedied on the expiry of twenty eight (28) days after receipt by the Party in breach of written notice from the other Party, the breach and the action required to remedy same.
- 12.5. Neither Party shall be liable to the other Party, or any other person, for any special, consequential, exemplary or incidental damages or for lost or anticipated revenues or profits relating to the same,

arising from any claim relating to this Agreement, or its termination, whether such claim is based on contract, tort (including negligence) or otherwise, even if an authorised representative of such Party is advised of the possibility or likelihood of the same.

- 12.6. The provisions of Clauses 1, 3, 8, 9, 10, 11, 12, 14, 15 and 16 shall survive any termination of this Agreement. Any accrued rights and liabilities of the Parties shall survive any termination of this Agreement.

### 13. Force Majeure

Neither Party shall be responsible or liable to the other Party for non-performance or delay in performance of any terms or conditions of this Agreement due to acts or occurrences beyond the control of the nonperforming or delayed Party, including, but not limited to, acts of God, acts of government, terrorism, wars, riots, strikes or other labour disputes, shortages of labour or materials, pandemics, epidemics, fires and floods, provided the nonperforming or delayed Party provides to the other Party written notice of the existence of and the reason for such non-performance or delay.

### 14. Notices

Save for the terms of Clause 10 above, any notice, request or consent under this Agreement shall be in writing and shall be sufficiently served if sent by courier service to the address of each Party shown at the head of this Agreement. For Khalifa University, all correspondence should be sent for the attention of the "General Counsel", with a copy to the "University Sponsored Research" and for the Partner all correspondence should be sent for the attention of

**[DEAN RESEARCH AND DEVELOPMENT, INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA; Mohanpur - 741 246, Dt. Nadia, West Bengal. INDIA; Phone: +91 33 6136 0060 Email: [rnd@iiserkol.ac.in](mailto:rnd@iiserkol.ac.in)]**

### 15. Applicable Laws and Dispute Resolution

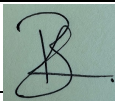
This Agreement shall be governed by and construed in accordance with the laws of the United Arab Emirates, as applied in Abu Dhabi. Any dispute or difference of any kind between the Parties in connection with or arising out of this Agreement (or the breach, termination or validity hereof) shall be finally settled in accordance with the rules promulgated by the Abu Dhabi Global Market Arbitration Centre.

### 16. General

- 16.1. Neither Party may assign or transfer this Agreement as a whole, or any of its rights or obligations under it, by operation of law or otherwise, without first obtaining the written consent of the other Party, such consent not to be unreasonably withheld or delayed.
- 16.2. No variation or amendment of this Agreement shall be effective unless it is made in writing and signed by both Parties.
- 16.3. Nothing in this Agreement creates, implies or evidences any partnership or joint venture between the Parties, or the relationship between them of principal and agent. Neither Party has any authority to make any representation or commitment, or incur any liability, on behalf of the other.
- 16.4. No waiver of any term or provision of this Agreement whether by conduct or otherwise in any one or more instances shall be deemed to be, or construed as, a further or continuing waiver of any such term or provision, or of any other term or provision, of this Agreement.



- 16.5. This Agreement is intended to be solely for the benefit of the Parties and is not intended to confer any benefits upon, or to create any rights in favour of, any person other than the Parties.
- 16.6. This Agreement, and any amendments hereto, may be executed in multiple counterparts, each of which shall constitute an original hereof.
- 16.7. This Agreement (including the Schedules attached hereto) sets forth all of the agreements and understandings between the Parties with respect to the subject matter hereof, and supersedes and terminates all prior agreements and understandings between the Parties with respect to the specific subject matter hereof.

	021-022 / 8474000405	Partner Ref:
	SG	OKN

IN WITNESS WHEREOF, the Parties have executed this Agreement by their duly authorized representatives as follows:

**SIGNED ON BEHALF OF KHALIFA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

Full Name: Professor Sir John O'Reilly

Signed:

Title: President

Date:

**SIGNED ON BEHALF OF INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER) KOLKATA**

Full Name: Professor Amitava Das

Signed:

Title: Dean of Research and Development

Date:

31/0/2022  
প্র. অমিতাব দাস / Prof. Amitava Das  
ডেপুটি ডিরেক্টর অফ রিসার্চ অ্যান্ড ডেভেলপমেন্ট  
ভার্সিটি ইনস্টিটিউট অফ সাইন্স এডুকেশন অ্যান্ড রিসার্চ কোলকাতা  
Indian Institute of Science Education and Research Kolkata  
ডেপুটি ডিরেক্টর অফ রিসার্চ অ্যান্ড ডেভেলপমেন্ট  
Deptt. of Higher Education, Govt. of India  
মোহনপুর-৭৪১২৪৬, পশ্চিমবঙ্গ  
Mohanpur-741246, West Bengal India

**READ & UNDERSTOOD BY KHALIFA UNIVERSITY PRINCIPAL INVESTIGATOR**

Full Name: Dr. Dinesh Shetty

Signed:

**READ & UNDERSTOOD BY PARTNER PRINCIPAL INVESTIGATOR**

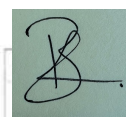
Full Name: Dr. Rahul Banerjee

Signed:

Rahul Banerjee

Department of Chemical Sciences  
Indian Institute of Science Education and Research Kolkata  
Mohanpur-741246, W.B., India

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**Schedule 1**  
Invoicing and Reporting Details

Duly signed and stamped (if applicable) invoices shall be emailed to: [internalfunding@ku.ac.ae](mailto:internalfunding@ku.ac.ae)

Invoices can be issued in either AED or USD\$, as per the table below. All invoices must be issued in English.

All payments of the Award shall be made by bank transfer. Partner bank account details:

**BANK ACCOUNT DETAILS**

Bank Name (Full)	INDIAN OVERSEAS BANK
Branch Name	Mohanpur
Complete Contact Address	P.O.: Krishi Viswavidyalaya, Mohanpur Dist. Nadia, West Bengal 741 252
Telephone No.	+91-8017414141
E.Mail	iob3250@iob.in
9-Digit Code No. of Bank & Branch	700020092
Account Number	325001000000002
Account Type (SB/CURRENT/CASH/ CREDIT etc.)	SAVING
IFSC Code No. of Bank	IOBA0003250
SWIFT CODE	IOBAINBB893

**Invoice and reporting schedule of Partner:**

<i><b>Deliverable</b></i>	<i><b>Submission Event / Date</b></i>	<i><b>Amount (AED)</b></i>	<i><b>Amount (USD\$)</b></i>
Execution of Agreement + Invoice	Last signature of the Agreement	AED80,000	\$21,768
1 <sup>st</sup> Progress Report	31 December 2022	--	--
1 <sup>st</sup> Annual Report + Invoice	30 June 2023	AED50,000	\$13,605
2 <sup>nd</sup> Progress Report	31 December 2023	--	--
2 <sup>nd</sup> Annual Report + Invoice	30 June 2024	AED25,000	\$6,803
3 <sup>rd</sup> Progress Report	31 December 2024	--	--
3 <sup>rd</sup> Annual report + Invoice	30 June 2025	AED30,000	\$8,163
Final Report input	31 January 2026	--	--

**Schedule 2**  
**Letter of Commitment**



**भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता**  
(भारत सरकार के मानव संसाधन विकास मंत्रालय द्वारा स्थापित एक स्वायत्तशासी संस्थान)  
**INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA**  
(An autonomous Institute established by Ministry of Human Resource Development, Government of India)

**Khalifa University of Science & Technology ("Sponsor")**  
**Competitive Internal Research Award (CIRA) Call**  
**Letter of Commitment**  
(To be followed by a full agreement if awarded)

CIRA Project Title: Next generation porous conducting polymers/frameworks for efficient reverse electrochemical desalination

CIRA Principal Investigator Name: Dinesh Shetty  
Date: May 21, 2021

To Whom It May Concern,

We, **Indian Institute of Science Education and Research (IISER) Kolkata**, hereby agree to participate as a funded external collaborator in the above named CIRA proposal as per the conditions and amounts below:

Financial Request from Sponsor (AED):	185,000
Financial Contribution to Project (AED):	46,250
Contribution Description:	Dr. Rahul Banerjee, from IISER Kolkata, India, will serve as a collaborator on the project and develop keto-enol tautomer stabilized membranes and provide it to KU for further water purification studies described in the proposal. In addition, he will be fulfilling the requirement by providing personal and instrumentation support from his lab. He will also contribute to the writing of the manuscript as and when work is completed. He or his researcher will visit KU for knowledge exchange, and the visiting cost (15000 AED) is included in the subcontract
Type of Contribution:	<input type="checkbox"/> Cash <input checked="" type="checkbox"/> In-Kind
	<input checked="" type="checkbox"/> Personnel & Resources <input checked="" type="checkbox"/> Equipment <input checked="" type="checkbox"/> Data

Intellectual Property

Foreground IP shall be vested as follows:

- Foreground IP generated solely by Khalifa University shall be owned by Khalifa University;
- Foreground IP generated solely by the Partner shall be owned by the Partner;
- Foreground IP generated jointly by Khalifa University and the Partner will be jointly owned by both Parties, with Khalifa University taking the lead in Intellectual Property protection and commercialization actions.

If awarded this activity will be governed by, and construed in accordance with, UAE and Abu Dhabi laws.

Signed by duly authorized institutional representative.

Name: Professor Amitava Das

Position Title: Dean of Research and Development, Indian Institute of Science Education and Research (IISER) Kolkata

Date: July 07, 2021

प्रो. अमिताभ दास/ Prof. Amitava Das

अध्यक्ष, अनुसंधान एवं विकास/ Dean of Research and Development

भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता - 741 246, भारत, दूरभाष: +91 33 6451 3294, फैक्स: +91-(0)33-23347425

Indian Institute of Science Education and Research Kolkata

उच्चतर शिक्षा विभाग, शिक्षा मंत्रालय, भारत सरकार, कोलकाता - 741 246, INDIA, Phone: +91 33 6451 3294, Fax: +91-(0)33-23347425

Deptt. of Higher Education, Under MoE, Govt. of India

मोहनपुर/Mohanpur-741246, नदिया/Nadia, पश्चिम बंगाल/West Bengal, India

	021-022 / 8474000405	Partner Ref:
	SC OKN	

### Schedule 3 Research Project

#### Project Summary

Water desalination is currently one of the main water sources in the UAE. To overcome the high-water stress expected in the region by 2040, developing effective materials for desalination is a high strategic priority. Capacitive deionization (CDI) is an emerging desalination technology with excellent efficiency, low energy consumption, environmental friendliness, and low operating costs. Existing electrode materials have drawbacks: for example, carbons have poor conductivity. Porous, redox-active, conducting covalent organic polymers/frameworks (COP/COFs) have inherent properties that potentially overcome many of these drawbacks and limitations. However, this research is in its infancy and has not yet been optimized for large-scale water-treatment. This proposal, which builds on successful preliminary studies, aims to develop the next-generation of porous organic electrode materials, optimize their use for desalination of seawater and oil/gas produced wastewater and investigate their potential for large-scale use.

#### Partner Scope of Work

Dr. Rahul Banerjee is an Associate Professor at IISER-K and a world leader in porous polymer research. He will be an integral part of the project and his group has pioneered free-standing COF membrane synthesis.

- Design and synthesize the redox-active conducting COP/COFs in various microscopic and macroscopic forms. (WP1; Tasks 1.1 and 1.2) *These tasks will be conducted in parallel at both PI's lab and the External collaborators' lab. Throughout the project period, it is a continuous task to optimize the materials even after the initial testing(s).*
- Characterization of synthesized materials and their properties (WP1; Task 1.2; WP2, Task 2.1).
- Simulation studies on synthesized materials (WP2; task 2.2). This task also will run in parallel at both PI's lab and the external collaborators' lab.
- Manuscript preparation (WP3; task 3.4)
- Initiating the knowledge exchange program between KU and IISER-K

#### Project Schedule

Tasks & Activities		July-Dec '22	Jan-Jun '23	Jun-Dec '23	Jan-Jun '24	Jun-Dec '24	Jan-Jun '25	Jun-Nov '25
<b>WP1: To design and synthesize the redox-active conducting COP/COFs in various microscopic and macroscopic forms</b>								
T1.1	Design strategies							
T1.2	Synthetic strategies							
<b>WP2: Characterize and investigate COP/COFs electrochemical properties and their performance</b>								
T2.1	Molecular and bulk characterization of polymers							
T2.2	Simulation studies							
<b>WP3: Fabrication and testing of COP/COFs as electrode materials for desalination.</b>								
T3.4	Publications							

**Note:** Tasks & Activities in red color within the total project Gantt chart shown above will involve the Partner's involvement either entirely or partially. The development of efficient material for the proposed application needs an R&D process in which design, optimization, and testing of materials occur throughout the project and mostly in parallel to facilitate the speedy process.

#### Research Project Full Proposal

The Full Proposal, as submitted, is appended hereto (23 pages). The incorporated Full Proposal provides further technical details of the research plan for the Research Project. Where any discrepancies may exist between the content of the Proposal and this Agreement, this Agreement shall take precedence.