



## Job Description

KTP project between the University of Birmingham, Federal University of Technology Owerri and DEKOOLAR Nigeria Limited

<b>Position Name</b>	Research Assistant (KTP Associate)
<b>Proposed Grade (if applicable)</b>	Up to the CONUASS 4 step 9, depending on qualification and experience.
<b>Background</b>	
<p>This is an exciting opportunity to lead a Knowledge Transfer Partnership (KTP) between the University of Birmingham, Federal University of Technology Owerri and De Koolar Nigeria Limited. The Knowledge Transfer Partnership project aims to develop a clean, effective and affordable solar-powered cooling system for perishable crops cold storage, thus reducing postharvest losses, and improving food security and the country's economy.</p> <p><b>Please note that the successful applicant will be an employee of the Federal University of Technology Owerri, but will be primarily based at DEKOOLAR Nigeria Limited premises at No.1 Alade close, beside Addide supermarket, off IJu Road, Ifako-Ijaye, Lagos.</b></p> <p><b>About the Role</b></p> <p>The successful applicant will carry out research and develop a novel solar-powered, desiccant-evaporative cooling system using advanced Metal Organic Framework (MOF) adsorbent material with superior water adsorption characteristics. The successful candidate, through the research, should</p> <p><b>Develop Skills</b></p> <ul style="list-style-type: none"> <li>• Develop both industry and research skills to boost your career</li> <li>• Access a dedicated training and development budget</li> <li>• Work across all aspects of the project including research and business activities</li> </ul> <p><b>Take Ownership</b></p> <ul style="list-style-type: none"> <li>• Solve challenges and develop your own learning</li> <li>• Manage your own workload to deliver project objectives</li> <li>• Contribute to the project's technical and commercial direction</li> </ul> <p><b>Collaborate</b></p> <ul style="list-style-type: none"> <li>• Benefit from continuous support from your academic and company supervisors</li> <li>• Work with innovative and ambitious company staff including contact with senior management</li> <li>• See the real-life impact of your work and research for the company</li> </ul> <p><b>About De Koolar Nigeria Limited</b></p> <p>DEKOOLAR Nigeria Limited was incorporated in 2000 and is a 100% indigenously owned HVAC Company with over two decades of industry experience. DEKOOLAR is a leading Nigerian manufacturer and supplier of a range of Ice Block Making Machines, Cold rooms, Blast Freezers, Display Chiller Fridges, Refrigerators and Air Conditioners, among other domestic and industrial heat transfer equipment. The company services include all aspects of design, installation, maintenance and repairs of domestic, commercial and industrial cooling systems.</p>	

### **About Knowledge Transfer Partnerships**

The Knowledge Transfer Partnership (KTP) scheme is a UK government-funded technology transfer initiative that supports partnerships between businesses and universities, placing graduates on challenging, high-profile projects. Further information is available at:

<https://www.birmingham.ac.uk/partners/partner-with-us/knowledge-transfer-partnerships/index.aspx>

### **Summary of Role**

The post holder will carry out research on the development of a novel solar-powered, desiccant-evaporative cooling system using advanced Metal Organic Framework (MOF) adsorbent material with superior water adsorption characteristics. This cooling system is for perishable crops cold storage application to reduce postharvest losses and improve food security and the country's economy. The candidate will be involved in the synthesis and characterisation of the MOF Desiccant material, thermodynamic modelling of the desiccant evaporative cooling system, manufacture and testing of the system and development of the marketing literature to enable commercialisation of the developed system.

### **Main Duties / Responsibilities**

The candidate will be responsible for:

- Thermodynamic characterisation of new desiccant materials (MOF) regarding their adsorption/desorption performance and thermal stability and developing optimal methods to integrate it in heat exchangers including deposition, coating and adhesion.
- Thermodynamic modelling of the MOF-Desiccant evaporative cooler
- Optimal design selection against a range of technical and commercial factors, including thermal modelling, experimental test facility, manufacturing technology and the business case for the optimal design of the MOF-Desiccant evaporative cooler.
- Prototyping and testing of design concepts and scaling considerations.
- Technical/engineering design of a product using numerical tools/models.
- Involvement in establishing intellectual property rights and market planning.
- Manufacture of the finished product to reflect all the developed knowledge/experience.

### **Person Specification**

#### Qualifications:

A master's degree in mechanical engineering, Chemical Engineering, Materials Engineering or Chemistry is required. A PhD in any of these fields will be an advantage.

#### Knowledge & Experience:

- Experience with Solidworks CAD software for system design including heat exchangers.
- Experience with system simulation software like MATLAB.
- Experience in adsorbent materials.
- Background in Mechanical Engineering, Chemical Engineering, Materials Engineering or Chemistry
- Experience in refrigeration systems design and testing.
- Excellent English (written and spoken).
- Ability to liaise with KB academics and the company staff regarding the proposed MOF Desiccant - Evaporative cooling system.
- Ability to liaise with various manufacturing and components suppliers including involvement with manufacturing and industrial engineering, design, sales and management.
- Ability to liaise with customers and end users regarding the merits of the developed technology.
- Ability to give presentations at national and international conferences.

### **Method of Application**

Applicants are required to submit their applications with their Curriculum Vitae detailing their competencies and containing the names and addresses of 3 referees to [ktp@acefuels-futo.org](mailto:ktp@acefuels-futo.org) on or before 12 midnight of October 21, 2024. Only shortlisted candidates will be contacted.