



ROYAL  
ACADEMY OF  
**ENGINEERING**

# Industry-Academia Partnership Programme



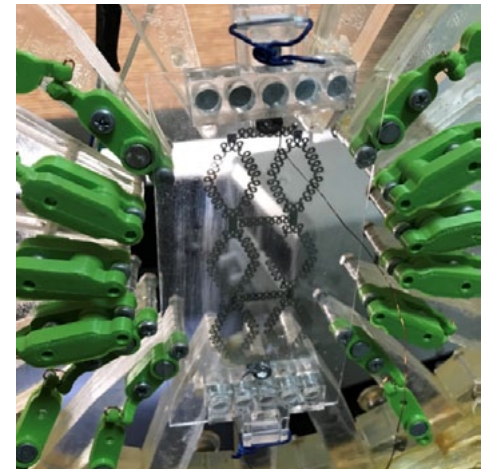
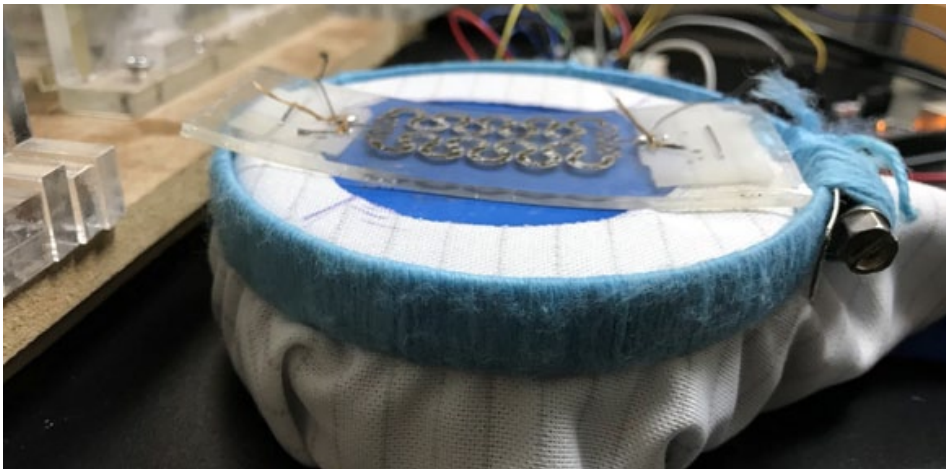
## JORDAN

**Under its remit as a delivery partner of the Newton-Khalidi Fund, the Royal Academy of Engineering has partnered with the Higher Council for Science and Technology, Jordan, to enhance engineering teaching, research and innovation outcomes in Jordanian universities by building bilateral industry-academia links.**

*Inkjet-printed respiratory rate wearable sensors for infants: towards remote monitoring solutions for low-setting villages and refugee camps* is one of the projects funded through this scheme. It brings together researchers from the German Jordanian University and Anglia Ruskin University in the UK, along with industry partners THERAPYAUDIT Ltd., UK, and Atlas Medical, Jordan.



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## BUILDING COLLABORATIVE PARTNERSHIPS

Professor Dingchang Zheng, Anglia Ruskin University, and Professor Ala'aldeen Al-Halhoul, German Jordanian University, met through a fund affiliated to the Higher Council for Science and Technology in Jordan. They identified the UK-Jordan Industry-Academia Partnership Programme as an ideal opportunity to develop a research programme that builds on their mutual interest in developing medical technologies that enable efficient treatments when resources are scarce.

"By establishing a sustainable research and innovation partnership with industrial partners we have been able to create a robust platform for collaborative research and commercialisation that looks across medical technology development and manufacturing in low/middle income settings," Professor Zheng explains.

Collaboration with companies both in Jordan and the UK will allow the researchers to share new insights directly with industry. "Engaging with academia helps us to access scientific expertise and research facilities that we do not have available internally," explains Dr Raed Shadfan, from Atlas Medical.

## IMPACT AND INNOVATION

The collaborators are aiming to develop an accurate and affordable respiratory monitor for newborn infants. The first week of life is a critical phase and respiratory distress syndrome can be a significant cause of infant mortality. The collaborators became alert to the scale of the issue through their work with a refugee camp in Jordan, where they observed how limited access to respiratory monitoring impacted access to appropriate healthcare.

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Dr Raed Shadfan, Atlas Medical

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Responding to this need, the collaborators aim to develop a wearable respiratory sensor that can make use of wireless communication for continuous, remote monitoring. This will support faster, more accurate identification of health conditions in newborn infants.

Inkjet printing technologies will form the basis for a new technique to create sensors for a biocompatible and flexible monitor. Early prototypes have had encouraging results. The team will work closely with industry to ensure that research outputs can be commercialised and designs conform to international medical design standards.

## MODELS OF ENGAGEMENT

Combined, the collaborators have the expertise needed for all stages of the process, from concept development to design and manufacture. They aim to share this knowledge by engaging researchers from both organisations in a series of training programmes, workshops and research visits.

The shared access to new technologies and techniques will support partners in the dual task of developing a device that solves a community needs while meeting industry standards. At the same time, academic researchers at all levels will strengthen their links with both local and international industries.

"Undergraduate students at the German Jordanian University will gain international experience in an emerging field," explains Professor Al-Halhoul. "The partnership has also supported the training of two local engineers and an intern from the Massachusetts Institute of Technology on the use of inkjet printing and the fabrication of stretchable sensors."

## UK-JORDAN INDUSTRY ACADEMIA PARTNERSHIP

As a Newton-Khalidi Fund delivery partner, the Royal Academy of Engineering works with the Higher Council for Science and Technology, Jordan, to co-fund awards that strengthen capacity and develop capabilities within Jordan engineering higher education and research institutions to carry out excellent teaching, research and innovation-related activities through collaboration with industry and UK counterparts.

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## NEWTON FUND

This project is supported by the Newton Fund, which is part of the UK's official development assistance (ODA) and promotes economic development and social welfare by strengthening science and innovation capacity.

## For more information

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**Above images:** Prototypes of inkjet printed sensors under development © Professor Ala'aldeen Al-Halhoul.