



Meet Dr Ehsan Danesh

Dr Ehsan Danesh received an MSc degree in Polymer Engineering from the Tehran Polytechnic in 2008. He then spent two years as an R&D researcher in the field of specialty polymers for food and dairy packaging industries. In 2011, he was awarded with the Marie Curie Actions fellowship, and joined Professor Krishna Persaud's research group at the School of Chemical Engineering & Analytical Science at the University of Manchester, to work on the FlexSmell project. Funded under FP7, the FlexSmell project aimed at the design and realisation of printed chemical sensing RFID tags for smart food packaging. His PhD thesis focused on the development of novel conducting polymer-based gas sensors on plastic substrates. Ehsan is currently working on the EPSRC Centre's iPESS project under the supervision of Professor Michael Turner at the Organic Materials Innovation Centre (OMIC) in Manchester.

Ehsan has received several awards, including the Wolfgang Göpel memorial award from the International Society for Olfaction and Chemical Sensing in 2013. His research interests include organic electronics, inkjet printing of functional materials, conducting polymers and nanocomposites, and (bio)chemical sensors.

I joined the EPSRC Centre in March 2014 after finishing my PhD at the University of Manchester, and I'm currently engaged with the OMIC in the iPESS project. My core responsibility is to explore the use of novel materials and printing techniques for the development of OFET devices for gas sensing applications. The nature of the job requires that I work with instruments such as the Fujifilm Dimatix inkjet printer, the SIJ super-fine inkjet printer and the Microdrop dispenser to pattern functional materials on a variety of plastic substrates. Apart from the commercial inks (such as conductive silver inks), I also investigate the printability of various materials, such as high-k dielectrics and polymeric semiconductors. This challenging role has allowed me to develop expertise in key areas of printed electronics which is my favourite field of research. I feel that the EPSRC Centre values my skills and provides the resources to pursue my own research ideas to an extent. This is of crucial importance to early-stage researchers like me who strive to turn creativity to reality.

I've had the opportunity to collaborate with an exceptionally talented group from multiple internationally well-known institutes within the EPSRC Centre on this cross-disciplinary project. Throughout my work as a postdoctoral research associate, I've gained not only technical proficiency but also a great deal of project management and leadership skills which have aided in my career development. For instance, I had the chance to help in organising the EPSRC Centre's Researcher cohort meeting in Manchester and the innoLAE 2015 conference in Cambridge. Such events also helped me to improve my communication skills

and establish links with people from academia and industry, both within and outside the EPSRC Centre.

I believe the EPSRC Centre for Innovative Manufacturing in Large-Area Electronics is a national centre with a worldwide impact. The fundamental research on large-area electronics that is going on within different projects in the EPSRC Centre creates a technological platform that eventually results in the reduction of manufacturing costs and enhancement in system performance. The emergence of wearable electronics in the form of smart watches and e-skin is only one example showing the potential markets that can benefit from the impact of EPSRC Centre's output. And that's actually one of the main things that attracted me to the job at hand: I can look beyond academia and see the end target, the final application.

Over the past months, the research in our project has developed to the practical experimentation and refinement stage; but we still need to address some critical challenges. We hope to achieve our final goals in upcoming months, and that's certainly achievable with the combination of hard work, ambition and expertise that is unique to our research team. However, let's not forget that one of the main objectives of the EPSRC Centre is to develop a long-term research programme to advance manufacturing processes in the UK electronics manufacturing industry. Therefore, I strongly encourage young scientists interested in organic and printed electronics to join our centre and experience an intellectually challenging environment, while being able to make an immediate impact and contribution.