



PostDoc Job Opportunity



DUBLIN CITY UNIVERSITY	First Name	Last Name	email	Institute	Address
PI name & contact details:	Enda	McGlynn	Enda.mcglynn@dcu.ie	DUBLIN CITY UNIVERSITY	Glasnevin, Dublin 9, Ireland.
School:	Physical Sciences				
Research Centre/ group affiliation:	National Centre for Plasma Science & Technology (NCPST)				
Research group/ centre website:	http://www4.dcu.ie/physics/ssl.shtml/ ; http://www.ncpst.ie/				

Brief summary of research group/ centre activity:

The research in our laboratory concentrates on the growth and characterisation of functional oxide materials, such as ZnO, CeO₂, ZnAl₂O₄ and Cu₂O. These materials are characterised using a variety of techniques including low temperature photoluminescence (PL) spectroscopy, combined with uniaxial stress and Zeeman (magnetic field) perturbations. Results are analysed using methods based on group-theoretical analysis of the potential defect symmetry

Description of postdoctoral project on offer:

Study of the defect symmetry properties of dopant species in single crystal ZnO.

This project will investigate the defect symmetries of the various shallow dopant species commonly found in ZnO as well as deeper lying centres. These defects are responsible for the background n-type doping that is found in all ZnO materials, and only by thoroughly understanding the defect structure and properties can researchers hope to produce p-type ZnO and enable various application areas such as bi-polar light emitting structures. Single crystal ZnO samples with well defined crystalline orientation and low temperature PL spectroscopy will be used in conjunction with uniaxial stress and Zeeman perturbations to elucidate the defect symmetries, along with group-theoretical analysis of the potential defect symmetries. It is also intended that some specific dopant implantations will be undertaken to determine the defect chemical properties, using the ISOLDE facility at CERN, of which the two PIs are members (as well as DCU as an institution) in addition to exploring the possibility of leveraging existing collaborative linkages with colleagues in Portugal and Germany for other implantation and characterisation activities.

Please indicate the core skills or disciplines that are required for this position:

Physics and possibly physical chemistry or electronic engineering.

Applicants should have an interest in solid state physics and quantum mechanics and a strong background in experimental techniques in physics, as well as being well grounded in the fundamentals of theory relevant to solid state physics and quantum mechanics.