



PostDoc Job Opportunity



	First Name	Last Name	email	Institute	Address
PI name & contact details:	Pascal	Landais	landaisp@eeng.dcu.ie	DUBLIN CITY UNIVERSITY	Glasnevin, Dublin 9, Ireland.
School:	Electronic Engineering				
Research Centre/ group affiliation:	RINCE				
Research group/ centre website:	http://www.dcu.ie/info/staff_member.php?query=Pascal+Landais				

Brief summary of research group / centre activity

The primary research activities of my group are: the design, characterisation and applications of lasers and semiconductor optical amplifiers for telecommunications; and Terahertz signal generation and waveguiding.

Description of postdoctoral project on offer:

The focus of this project is to examine the employment of a mode-locked quantum dash semiconductor laser (MLL) as a multi-carrier transmitter to increase throughput and enhance spectral and energy efficiency of medium reach optical networks. Two aspects have to be taken into account in this project, i) the optimum modulation format used by the transmitter and ii) the definition the ideal detection technique to be used. After a complete characterisation of the MLL parameters such as the phase noise and relative intensity noise it comes to using spectrally efficient advanced modulation formats. We will initially examine the use of imposing various modulation formats on the multi-carrier signal emitted by the MLL. The formats explored include standard on-off keying, differential quadrature phase shift keying, orthogonal frequency division multiplexing, quadrature phase shift keying and quadrature amplitude modulation. On the receiver side, we will examine both direct and coherent detection depending on whether the system will be optically or electrically coherent. The benefit reaped in terms of energy efficiency from the use of a multi-carrier transmitter (as opposed to multiple lasers) and direct detection schemes (vs coherent detection schemes) will be experimentally verified..

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

Opto-electronics, nanomaterials, optical telecommunications