



## Laser systems on Photonic Integrated Circuits



Training Course Leader : Dr Erwin Bente (COBRA Institute)

This training course is an introduction to the fundamentals and the widely varying possibilities and applications of **integrated semiconductor laser systems** that can be realized using **open access photonic integrated circuits based on Indium Phosphide (InP)** substrates. Industrially proven InP technology platforms have in recent years been opened up for use by anyone interested in realizing such photonic integrated circuits.

This course provides a comprehensive introduction to designers wishing to create integrated circuits which include lasers, amplifiers, phase modulators and a range of other important building blocks on the **JePPIX** photonic integration technology platforms. This training course will complement the presentations at the European Photonic Integration Forum 2016 to be held in conjunction with the Exhibition.

In the first part of this course the basics of the integration technology and the fundamental optical circuit components are discussed. Particular emphasis will be on the semiconductor optical amplifier. In the second part, the basic principles and an approach for designing laser cavities are presented. This is followed by a presentation of dynamical modeling and simulation techniques. This will be illustrated with examples for lasers and photonic circuits. Continuous wave, widely tunable and pulsed laser systems will be described.

### Benefits and Learning Objectives

- Understanding the basic principles used in InP based photonic integration technology
- Understanding how to create single chip laser circuits from photonic building blocks
- Insight into the fundamentals and a design methodology for integrated laser cavities
- Understanding how to integrate multiple lasers on the same chip and with other circuits
- Developing an overview of possible applications through examples of realized circuits
- Learn about open access InP technology platform capabilities

### Intended Audience

The course is intended to give an introduction to the possibilities of open access InP photonic integration technology. The course will benefit graduate students as well as industrial and academic researchers who are considering or engaged in the design and application photonic integrated circuits.

### Practical Details

Participation is free of charge but registration is required. Registration is made by sending an email to [coordinator@jeppix.eu](mailto:coordinator@jeppix.eu). Further information on the training and forum will be available at [jeppix.eu](http://jeppix.eu)

