

# Photonic Lab-on-a-Chip: Integration of Optical Spectroscopy in Microfluidic Systems

Andreu Llobera<sup>a</sup>

Isaac Rodríguez-Ruiz<sup>b</sup> Tobias N. Ackermann<sup>c</sup>, Xavier Muñoz-Berbel<sup>c</sup>

<sup>a</sup> *Microliquid S.L. Goiru Kalea 9, 20500 Arrasate, Spain*

<sup>b</sup> *Laboratory of Chemical Engineering - LGC · Toulouse, France*

<sup>c</sup> *Institut de Microelectronica de Barcelona<sup>1</sup> -CNM/CSIC Campus UAB, 08193 Cerdanyola del Valles, Spain, andreullobera@microliquid.com*

Photonic lab-on-a-chip analytical systems (PhLoCs) are considered the unique integration of photonic systems with microfluidics. In this seminar, we will discuss the main principles that have paved the PhLoC development, and specially for the on-chip spectrophotometric detection.

The synergistic combination of photonic integrated circuits (PICs) with LoC gives rise to the photonic lab-on-a-chip (PhLoC) concept [1]. Therein, the main function of microfluidics is the manipulation and transport of the analytes, while the PICs transduce the (bio)chemical signal arising from the analytes in situ to a quantifiable signal. In this context, the implementation of a PhLoC has to be based firstly on the selection of the appropriate detection mechanism, i.e., colorimetry [2], fluorimetry [3], scattering [4] or plasmonics [5], and secondly, the design of the PhLoC, considering both the optical properties of the materials and the geometry of the optical elements. In this presentation, either monolithic [6] and modular (figure 1) [7] PhLoC concepts will be discussed.

## REFERENCES

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## FIGURES

