# FORMULAIRE D'INSCRIPTION AUX FORMATIONS SPÉCIFIQUES ED PSIME

*Document à retourner à marie.legay@unicaen.fr* ***avant le 22 mars 2021***

**NOM / Prénom du doctorant :**

**Inscription en :** ○ 1ère année ○ 2ème année ○ 3ème année ○ année dérogatoire

**E-mail :**

**Établissement :** Université de Caen Normandie

**École doctorale :** AUTRE

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## Inscription aux formations spécifiques de l'École Doctorale :

☐ **Luminescent materials and lasers* (à Caen)**

☐ **Characterization of the surface of functional crystalline materials : from fundamental to application* (à Caen)**

☐ **LATEX**

**** cf descriptif, date et volume horaire page suivante***

**Luminescent materials and lasers – 4h lestcure, 20h Pratical Work – Alain BRAUD, Christophe LABBE, Jean-Louis DOUALAN, Vivien MENARD**

This course focuses on the ptical properties of luminescent materials and thier application to lasers. The pratical part of this course will aim at the implementation by the PhD students of fabrication and characterisation techniques of these materials and the ralization of solid-state laser. It is intented for PhD students of the ED PSIME wishing to develop their knowledge in the field.

**Course (4 hours)**

- Stectroscopic properties of luminescent materials
- Materials for optics and lasers
- Spetroscopic measurement techniques

**Small group practical work (20 hours)**

- Growth of massive single crystals and in thin layers
- Cutting and polishing crystals and glasses
- Absorption and transmission spectroscopy
- Time-resolved emission spectroscopy
- Simplfied modeling of a laser
- Pratical realization of a solid-state laser emitting in the visible

***Merci d'indiquer vos disponibilités (cochez la case correspondante si une des semaines ne vous convient pas ) :***

☐ **du 7 au 11 juin 2021** ☐ **du 21 au 25 juin 2021**

**Characterization of the surface of functional crystalline materials : from fundamental to application – 24h – Adrian DAVID, Yohann BREARD, Isabelle MONNET, Philippe BODUCH**

In this course we will take the example of materials based on oxides know mainly for their electronic properties. We will present some modern surface characterization techniques (structure, morphology, controlled environment, etc.) used in fundamental research as well as in research and development on an industrial scale.

- **Scanning Electronic Microscopy**:Characterization at the micrometric and nanometric scale of grains and grain boundaries. Elemental chemical analyzes by EDS (Energy Dispersive Spectroscopy). Crystallographic structure of the compound surface by EBSD (Electron BackScattered Diffraction).
- **Transmission electronic microscopy**:Study of stress regimes of low dimensional heterostructures. High resolution imaging, electronic diffraction, GPA (Geometrical Phase Analysis) technique.
- **Atomic Force Microscopy**:Roughness state of the surface of a sample. Analysis of a magnetic behavior (MFM) or piezoelectric (PFM), approach relation structure / properties
- **X-ray diffraction**: Reflectivity and grazing incidence measurements
- **Wettability**:Behavior of the surface of the material by relating the synthesis conditions and the interaction with a solvent deposited on the surface (biocompatible materials ..)
- **Introduction to the ion matter interaction**
- **Ion beam analysis**:principles, use, advantages of techniques: PIXE / PIGE, RBS, NRA, ERDA
- **SIMS (secondary ionization mass spectrometry)** – TOF (time-of-flight) analysis
- **Ion beam spectrometry**:LEIS MEIS

***Dates proposées :***

☐ **le 4 et le 11 mai 2021 de 9h à 12h30 et de 14h à 17h**

## ★ Latex – 6 hours practise – Céline Alec

***Please check the dates when you're available:***

☐ **May 17, 2021** ☐ **May 18, 2021** ☐ **May 19, 2021** ☐ **May 20, 2021** ☐ **May 21, 2021**

### Objectives

This training is for students of Doctoral School MIIS, but is open to PhD students of other doctoral schools, especially PSIME and EGN. It aims at training PhD students to using LATEX through practise directly on computers. For the various notions, minimal examples will be provided, from which students will be able to extrapolate and explore the documentation, so as to adapt the training to their personal needs. Students are encouraged to use their own computers for exercises, so that the working environment itself be adapted to the personal needs of each one.

Students with any level (from beginners to advanced users) will *a priori be welcome*. The training will cover the following themes, depending on each one's needs (the list is not exhaustive, feel free to indicate other needs, if any, before the training begins):

— my first ocument,

— write algorithms and code,

— manage one's bibliography with BIBTEX,

— insert images, and create illustrations with tikz,

— prepare a presentation with beamer.

### 2 Organisation

The training will take place in May (exact date still to be defined) on Campus 2 in Caen, during one day. The proposed organisation is as follows:

— during the morning, a 2-hour sequence, dedicated to first steps with the environments (text editor or editor dedicated to LATEX, compiler) and possibly to installing them on the participants' computers ; this sequence will be useless for students who have already used LATEX,

— during the afternoon, a 4-hour sequence, during which students will have the opportunity to practise exercises autonomously, using examples provided on themes of their choice (see list above), and with the help of the trainer. So as to make preparing this sequence easier, participants are asked to tell in advance whether they already have LATEX installed on their computer and, when not, to tell what their operating system is.