

**MONABIPHOT**  
**Molecular Nano- and Biophotonics**

**Duration:** 24 months

**Course description:**

The Molecular Nano-and Biophotonic (MONABIPHOT) Course offers an interdisciplinary training in biophotonics with a large palette of applications applied to a better understanding of cancer and neurological diseases. EU partners partners are ENS Cachan (FR), Coordinator, University Complutense in Madrid - UCM (ES), Wrocław University of Technology - WRUN (PL), Wrocław University - WUT (PL), University Paris Descartes - UPAD (FR). Non-EU partners are National Taiwan University - NTU (TW), National Chung Cheng University - CCU (TW) , St Petersburg State University of Information Technologies, Mechanics and Optics - ITMO (RU), Technion – Israel Institute of Technology (IL) and Rice University (USA). Two companies (Saint Gobain and PSA), and a NPO organization are Associate partners.

The purpose of this EMMC is to set-up a real interdisciplinarity at the educational and initial research level, by providing an authentic pluridisciplinary Academic pathway, involving physics, chemistry and biology courses at a strong degree of integration. Each EU partner offers lectures in at least 2 disciplines (Physics, Chemistry, Biology, Engineering). Students will acquire a broad culture in biotechnology and optical sciences oriented toward biological structures and processes, with a real capacity to adapt to the quick technological evolutions of the domain and a good potential to propose novel original solutions of scientific and technological issues. The first semester (in Cachan/UPAD) is mainly devoted to Photonics. Students also follow Basic Courses in domains (Maths, Physics, Chemistry or Biology) complementary of their initial background. The second semester is spent either at UCM (organic chemistry, sensors), or at WRUN (biochemistry, modeling) followed by an international summer school organized on research topics relevant to the Master Program. The third semester, focused on biophysics, is spent either in Cachan/UPAD or in WUT. The last semester is devoted to a research project. EU students may spend 3 months in a non-EU partner. Students must gain at least 20 ECTS in each discipline to ensure a really multidisciplinary training, and have to attend Seminars, lab visits and other transdisciplinary events to gain a mandatory 6 ECTS interdisciplinary module after a final «discussion exam». They are also encouraged to define a personal, transdisciplinary pathway corresponding to a more specialized dimension of their training.

Applicants having successfully performed at least 3 years of Academic training in Physics, Chemistry, Biology or Electrical Engineering are eligible for application. The whole academic pathway can be followed in English, with some optional courses taught in Spanish or French. MONABIPHOT students will receive, from the universities where they spent a semester, a joint master diploma awarded by Cachan and UCM, and/or a multiple degree with Polish Universities. A convergence towards a single degree will be implemented during the Master.

**Website:** <http://www.monabiphot.ens-cachan.fr>

**Partners:**

ECOLE NORMALE SUPERIEURE DE CACHAN, France (Co-ordinating Institution)  
UNIVERSITÉ PARIS DESCARTES - PARIS 5, France  
TECHNION-ISRAEL INSTITUTE OF TECHNOLOGY, Israel  
POLITECHNIKA WROCLAWSKA (WROCLAW UNIVERSITY OF TECHNOLOGY), Poland  
UNIwersytet Wroclawski (WROCLAW UNIVERSITY), Poland  
NATIONAL RESEARCH UNIV. OF INFORMATION TECHNOLOGY, MECHANICS, OPTICS, Russian Federation  
UNIVERSIDAD COMPLUTENSE DE MADRID , Spain  
NATIONAL CHUNG CHENG UNIVERSITY, Taiwan  
NATIONAL TAIWAN UNIVERSITY, Taiwan  
WILLIAM MARSH RICE UNIVERSITY, United States

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