

Synthesis of light-sensitive polymers for cancer chemotherapy

Cancer is one of the leading causes of death in the world. Many treatments involve surgery to remove the tumor and the surrounding tissues followed by chemotherapy to kill residual cancer cells and thus reduce cancer recurrence. However, solutions to release the anti-cancer drug only at tumor tissues to lower side effects remains a key challenge.

The project aims at developing light-sensitive polymers for cancer chemotherapy. Near infrared light was chosen due to its ability to penetrate deeply into biological tissues and to trigger simultaneously multiple actions to kill cancer cells (hyperthermia, release of an encapsulated anti-cancer agent, and therapeutic action of the polymer). The structure of the polymer will be tuned to fulfill the requirements of drug delivery systems such as stealthiness and accumulation at tumor sites, while considering an alternative to poly(ethylene glycol) to overcome its drawbacks. The work of the postdoctoral researcher will focus on the synthesis of a library of polymers of controlled topology, functionality, and composition to combine photothermal and photoactivated chemotherapies for the treatment of cancer. Their properties such as thermoresponsive behavior and light responsiveness will be investigated by the postdoctoral researcher, while their ability to kill cancer cells will be evaluated *in vitro* in collaboration with the laboratory biomaterials and bioengineering (UMR_S 1121) in Strasbourg.

Requirements & Application

The position is expected to start in November 2024 at the Institut Charles Sadron, laboratory located in Strasbourg (France) focusing its research on polymer and self-assembled systems. The contract is proposed for 13 months with a possibility of extension up to 24 months.

The candidate should hold a Ph.D. degree or equivalent in molecular (organic or polymer) chemistry with a strong interest for polymer sciences and interdisciplinary research at the interface of chemistry and biology. The candidate should have advanced knowledge in controlled radical polymerization, organic synthesis, purification and characterization of organic compounds. A previous experience in peptide synthesis or RAFT polymerization would be appreciated.

The candidate should be rigorous, systematic with good organizational skills and be willing to evolve in an interdisciplinary project and gain skills in peptide chemistry and the investigation of self-assembled systems. He/she should be able to report his/her progress and data in a concise and precise manner and be able to work independently as well being a team player.

Applications must include at least a one-page cover letter explaining why you wish to work on this project and a detailed CV with the contact information of at least two references (persons who may be contacted). To apply, please submit your application on the CNRS job portal (<https://emploi.cnrs.fr/Offres/CDD/UPR22-DELCHA-007/Default.aspx>). Any application received by any other manner will not be considered.