Name	Job Title	Area of Expertise
DAO THI NGOC ANH	Associate Professor	Chemistry and Materials Science

1. Main Research Topics

This laboratory uses a special biodegradable biopolymer, silk protein, to develop nanomedicines. Silkworm silk has a long history in the fabric industry and recently received great attention for biomedical applications. Silk protein was found to possess very potential characteristics for biomedical research, for example, stimulating cell proliferation, high biocompatibility, biodegradability and anti-inflammatory. We can produce many types of silk materials for pharmaceutical use, including nanoparticles, films, fibers, and hydrogels.

① **Creation of silk nanoparticles as a versatile drug carrier**

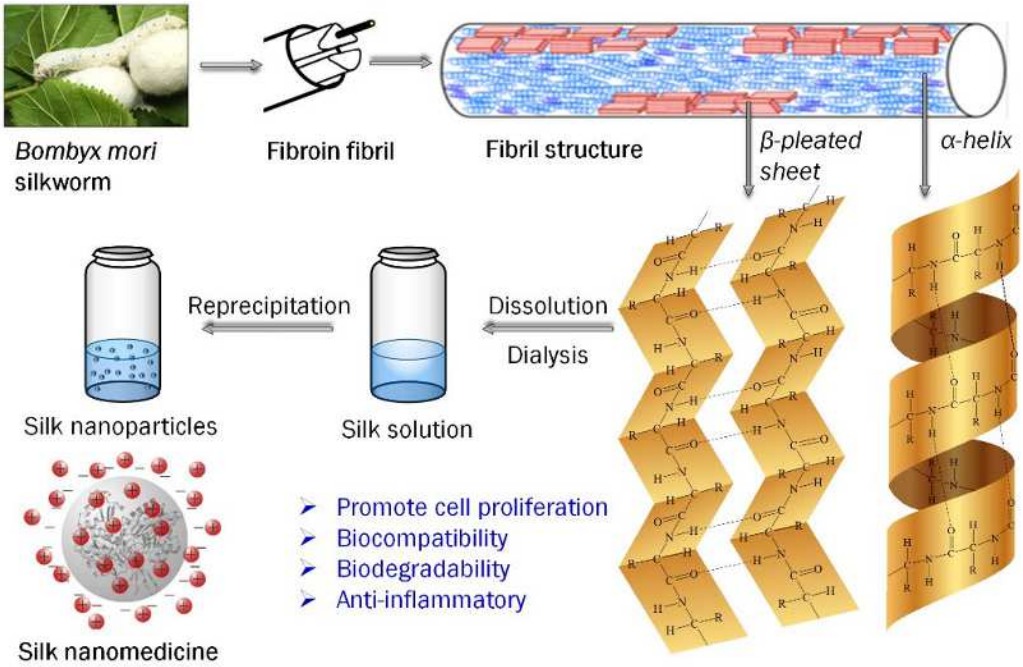
In this study, we aim to develop methods to fabricate silk nanoparticles with tunable surface charges and secondary structures for a wider range of drug applications with drug control release.

② **Multi-functionalized silk nanomedicine**

With the complexity of cancer and its treatments, it is essential for expanding the functionalities of silk nanoparticles to improve pharmaceutical effectiveness, including active targeting, imaging, and controlled drug release. In this research, we modify silk protein and its materials with various agents to enhance their functionalities in drug delivery.

③ **Silk hydrogel and film for localized cancer therapy**

Chemotherapy is a routine clinical practice for treating high-grade malignant glioma, but local chemotherapy for delivering therapeutic payloads effectively and sustainably is still in pre-clinical development. Silk hydrogel and film has been demonstrated to be well-tolerated *in vivo* with minimal inflammation or host immune response when implanted directly into tissues.



2. Keywords

nanomaterials, polymer chemistry, drug delivery, biosensors, cancer therapy

3. Remarks and Websites

We are conducting research using funding from competitive and collaborative research funds, such as the Japan Society for the Promotion of Science's Grant-in-Aid for Scientific Research B (until FY2029 and the JGC-Saneyoshi Scholarship Foundation's Research Grant (until FY2025).

Research is a great way to contribute to society, while you can have fun discovering the secrets of the universe. We conduct various interesting studies using biopolymers and we welcome your participants.

researchmap: https://researchmap.jp/anhdao
Laboratory: https://www.cms.nagasaki-u.ac.jp/lab/kobunshi/