

AIBN Master Projects | Associate Professor Chun-Xia Zhao

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Polymeric nanoparticles with exceptionally high drug loading for cancer therapy

Lead Investigators

A/Prof. Chun-Xia Zhao, Dr Yun (Amy) Liu

Many anticancer drugs are water insoluble, which makes their administration challenging (e.g. paclitaxel, docetaxel, camptothecin, etc.). Camptothecin analogues and derivatives have antitumour activity via binding to topoisomerase I which exhibited significant activity against a broad range of tumours. However, the poor water solubility as well as its poor stability hinder its therapeutic efficacy in clinical applications. We developed a new platform technology for making hybrid core-shell materials with exceptionally high drug loading and programmed drug release. This project will develop high camptothecin-loaded polymer nanoparticles based on our platform technology to enhance the solubility and stability of camptothecin to achieve better antitumour efficacy.

This project is supported by an ARC Discovery Project.

Fundamental study on the formation of drug-loaded polymeric nanoparticles with precisely controlled properties

Lead Investigators

A/Prof. Chun-Xia Zhao, Dr Yun (Amy) Liu

Poor water solubility of many chemical actives hinders the development of new pharmaceutical, agricultural, food products. For example, 40% of approved drugs and 90% of drugs in development are water-insoluble. Our group has developed a new platform technology for making hybrid core-shell materials with exceptionally high drug loading capacity and programmed drug release. This platform technology is based on the sequential nanoprecipitation of the drug and the polymer. This project will fundamentally study and understand how different factors affect the precipitation sequence of polymers and drugs, and further develop this platform technology into a more universal method for various applications.

This project is supported by an ARC Discovery Project.

Contact the project advisor directly to discuss the project and arrange a meeting or AIBN Events (aibn.events@uq.edu.au) to arrange a visit to the AIBN lab.

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