

物理学系セミナー/国際交流基金事業講演会 /大型研究プロジェクト講演会のお知らせ

題目：ポリ-アルキルシアノアクリレート・ナノ粒子：作製と医用への応用
Poly(alkylcyanoacrylate) nanoparticles: preparation and biomedical applications

講師：Georgi Yordanov 氏 (Sofia University, Bulgaria)

日時：2009年11月6日(金) 16時20分～17時50分

場所：理工学部 A 棟 208 教室

講演要旨：アロンアルファなどの接着剤として使われているポリ・アルキルシアノアクリレートは生体適合性がよく、そのナノ粒子は患部特異的に薬を運搬する DDS (ドラッグデリバリシステム) としての応用が期待されている。ここではその製法と応用例を紹介する。

(要旨原文)

One of the most exciting developments in therapeutic and diagnostic medicine has been the utilization of nanoscale materials, an area termed nanomedicine. Nanotechnology offers a great opportunity for the rational delivery of drugs to a desired target site in the body following oral and systematic administration. Nano-sized delivery systems possess a number of advantages, such as small particle size and narrow size distribution, surface features for target-specific localization, and protective insulation of drug molecules to enhance drug stability. Recent advances in the development of colloidal drug delivery systems have shown significant effects in the treatment of severe diseases, such as cancer and intracellular infections. Toward this goal, the poly(alkylcyanoacrylate) nanoparticles meet the requirements for a drug carrier system as a consequence of their biocompatibility, biodegradability, low toxicity, and ability to overcome the multidrug resistance in cancer cells.

This lecture considers the utilization of poly(alkylcyanoacrylate) nanoparticles as nanocarriers for targeted delivery of anticancer and antimicrobial drugs. The methods of nanoparticle preparation and characterization are presented. Important topics, considering biodegradation, in vivo distribution and toxicity of the nanoparticles are discussed. Overview of our recent results on the preparation and characterization of poly(alkylcyanoacrylate) nanoparticles loaded with anticancer drugs and antibiotics is presented. The possibilities for control of important nanoparticle characteristics, such as size distribution, nanoparticle surface chemistry, drug loading efficiency, and drug content, are discussed. The investigation of drug release kinetics from nanoparticles at physiological-like conditions opens a perspective for the theoretical description of the release process. Finally, the possibilities for future development and improvement of poly(alkylcyanoacrylate) nanoparticles as drug delivery systems are considered.

Yordanov 氏は明治大学国際交流基金事業での外国人招聘で1ヶ月間明治大学に滞在されます。物理学科吉村と CdS, CdSe などの蛍光性ナノ粒子の合成で共同研究を行ってきました。学部生、院生、教員の皆様のご参加をお願い申し上げます。

(連絡先：吉村英恭 tel:044-934-7439, hyoshi@isc.meiji.ac.jp)