

Development of fluorescent-organically modified silica (ORMOSIL) nanoparticles as targeted probe for Leptospira

Thursday 9 June 2016 12:15 (15 minutes)

Leptospirosis is an infectious disease caused by pathogens of the genus *Leptospira*. This disease becomes a wide-spreading problem in tropical areas including Thailand. A method of detection which is used nowadays is microscopic agglutination test (MAT) but its detection limit is so high that it cannot be used to detect pathogens in low concentration samples. To develop a new method that has lower detection limit, organically modified silica (ORMOSIL) nanoparticles with encapsulated fluorescent dyes were used. In this research, fluorescent-ORMOSIL nanoparticles were synthesized and tagged by antibodies that are specific for *Leptospira*. After synthesizing, these nanoparticles were characterized by transmission electron microscope (TEM) which showed that they are spherical shapes and their average size is 42.4 nm. Moreover, they were analyzed by fourier transform infrared spectroscopy (FTIR) which reported that there is carboxyl group on their surfaces. Finally, its detection limit is reported as 10⁵ cells/ml by observing agglutination with pathogens under fluorescent microscope. According to this experiment, we can conclude that fluorescent-ORMOSIL nanoparticles are able to be used as a targeted probe for *Leptospira*. For future works, we expect to develop this method to have a multiplex function and to be used as targeted probe for other diseases.

Author: Ms KULSAYUMPORN, Naphatsorn (Student)

Co-authors: Ms SUWATTANAPUNKUL, Boonyaporn (Student); Ms WATTHANAPRAKARNCHAI, Jidapa (student)

Presenters: Ms SUWATTANAPUNKUL, Boonyaporn (Student); Ms WATTHANAPRAKARNCHAI, Jidapa (student); Ms KULSAYUMPORN, Naphatsorn (Student)

Session Classification: Session XXII

Track Classification: Material Physics, Nanoscale Physics and Nanotechnology