

11<sup>th</sup> International Conference and Expo on

# Nanoscience and Molecular Nanotechnology

October 20-22, 2016 Rome, Italy

## Polyacrylic acid coated PAMAM dendrimer nanocluster as a pH-responsive drug delivery vehicle for targeted therapy

Tsu An Yang and Yaw Kuen Li

National Chiao Tung University, Taiwan

The advanced and innovative design of antibody/drug nanoparticle has gained tremendous attentions and has been considered as a potential treatment in clinic. In this study, the as-prepared cross-linked PAMAM dendrimer nanocluster (DNC) is electrostatically covered with Polyacrylic Acid (PAA). Consequently, the negatively charged particle is capable of absorbing an anti-cancer drug, doxorubicin (DOX) and also immobilizing anti-HER2 antibody (HER2) via the covalent linkage. The fabricated product (DNC@PAA:DOX-HER2) exhibited high encapsulation efficiency (EE) of DOX and showed the colloidal stability in culture medium. PAA is known as pH-sensitive polymer, which controls the cargo to be liberated by electrostatic repulsion. Our study demonstrated that DNC@PAA:DOX-HER2 displayed an excellent ability to sensitize SKOV3 cell (a HER2 positive cell line). The cargo is expected to be trafficked to the acid organelle and discharged to release the cytotoxicity. In order to get closer to the clinical practice regarding the cocktail treatment, another anti-cancer drug, Monomethyl Auristatin F (MMAF) will be equipped with DNC@PAA:DOX-HER2 to establish a multi-drug delivery system in our subsequent study.

### Biography

Tsu An Yang has completed her Bachelor's degree from National Tsing Hua University of Biomedical Engineering and Environmental Sciences. She is a Master's student in National Chiao Tung University of Applied Chemistry. Her studies are focused on nanoparticle design and antibody drug conjugates.

[joanne8109@hotmail.com](mailto:joanne8109@hotmail.com)

### Notes: