

Professor Won Jong Kim's Biographical Summary



Prof. Won Jong Kim received his BSc from Hanyang University in 1998, and M.S. and Ph. D. in Biomolecular Engineering in 2004 at Tokyo Institute of Technology. During his graduate studies with Profs T. Akaike and A. Maruyama, he developed a polymer-mediated DNA detection system. From 2004 to 2007, he was a postdoctoral fellow at the University of Utah under the supervision of Prof. Sung Wan Kim. Currently, he is a tenured full professor at the Department of Chemistry, POSTECH. He received KCS-Wiley Young Chemist Award (2011), Wiley-PSK Journal of Polymer Science Young Scientist Award (2012), KCS-Award for the Advancement of Science (2014), and PSK-Mid-career Researcher Academy Award (2015). He is an associate editor of newly launched journal “Nanotheranostics”, and editorial member of “Materials Today Chemistry”.

His research background is mainly focused on synthesizing polymeric drug/gene carriers, developing new chemistries for the polymeric carriers, and exploring their potential towards efficient delivery. Previously, in his PhD, he has unraveled the unique potential of polymers in inducing DNA strand exchange reaction through the interaction between cationic polymer and DNA, and also developed a novel polymeric device which could rapidly analyze and detect DNA up to a precision of one-base mismatch through polymer-mediated DNA strand exchange reaction (Ph.D. studies were carried out under the supervision of Professor Toshihiro Akaike and Atsushi Maruyama at Tokyo Institute of Technology). During his post-doctoral period, he developed cell-specific targeted gene carriers using RGD peptide and oligoarginine (Post-doctoral research was conducted under the direction of Professor Sung Wan Kim at University of Utah). Since he started his own independent career at POSTECH in Aug 2007, he has expanded his research interest in the area of developing new polymeric drug and gene carriers that are more cell-specific and biodegradable, and designing novel hybrid materials with inorganic nanoparticles including superparamagnetic, photothermal, and pH-sensitive carriers for stimuli-sensitive applications. Also, using the basic principle of DNA strand exchange reaction, he developed various strategies for one-base mismatch detection. To this end, he and his group members have focused their research efforts on the polymer nanochannel systems for continuous DNA detection and label-free DNA detection systems using the intrinsic fluorescence of silver nanocluster. He also further extended the research subjects on delivery to gas molecule delivery like nitric oxide (NO) controlled release systems and its application for modulation of cell proliferation and anti-bacterial activity.