

高分子科学系列讲座

高分子物理与化学国家重点实验室 中国科学院长春应用化学研究所

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从事专业	Polymer Science and Engineering		
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报告时间	2012.3.31 上午 9:00	报告地点	主楼四楼学术报告厅(410#)
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报告人背景	<p>EDUCATION AND APPOINTMENTS B.S., Chemical Engineering, Seoul National University, 1978 M.S., Chemical Engineering, Korea Advanced Institute of Science and Technology (KAIST), 1981 Ph.D., Chemical Engineering, Korea Advanced Institute of Science and Technology (KAIST), 1984 1978 -1979 Research Scientist, Korea Institute of Science and Technology 1984 -present Professor of Department of Polymer Science and Engineering, Sungkyunkwan University 2005 -2007 Dean of College of Engineering, Sungkyunkwan University</p> <p>PROFESSIONAL ACTIVITIES Director of Theranostic Macromolecules Research Center (NRF) President Elect of the Polymer Society of Korea (2012-) Member of Academy of Science and Technology of Korea (2011-) Member of National Academy of Engineering of Korea (2007-) Fellow of ISU of Biomaterials Science and Engineering (2008-) Council member of Pacific Polymer Federation(2009-) Vice President of Korean Society of Biomaterials (2007 - 2010) Chairman of Polymer Div. of the Society of Chemical Engineers, Korea (04 -05)</p> <p>MAJOR RESEARCH INTERESTS Biomaterial, Polymeric hydrogels and micelles, Biodegradable polymer</p>		
报告题目	Smart Block Copolymers for Theranostics		
内 容 摘 要	<p>Stimuli-responsive polymeric systems, including micelles and hydrogels, have attracted extensive attention as "smart" materials for biomedical applications. In this presentation, we would like to introduce some recent works on the pH and/or temperature responsive micelles and hydrogels for controlled drug delivery and molecular imaging applications.</p> <p>In our system, the pH-responsive polymeric micelles were composed of hydrophilic methyl ether poly(ethylene glycol) (MPEG) and pH-responsive degradable poly(β-amino ester) (PAE) segments. This diblock copolymer, which could self-assemble nano-sized micelles with core-shell structures under aqueous conditions, showed noticeable the pH-dependent micellization-demicellization behavior applicable to acidic tumor targeting. Antitumor efficacy of doxorubicin loaded pH-responsive polymeric micelles was evaluated from in vitro and in vivo experiment. Besides, pH-responsive micelles were used for MRI (magnetic resonance imaging) agent carrier. From mouse with ischemia model, feasibility of iron oxide carrier was evaluated.</p> <p>We have also investigated an injectable carrier of pH/ temperature sensitive hydrogel, penta-, tri- and multi-block copolymer PAE-PCL-PEG-PCL-PAE, for controlled drug/protein delivery. The cationic nature of PAE is used as the second function to make the ionic complexes with anionic biomolecule loaded into the hydrogel such as insulin. As a result, the release of drug/protein from this hydrogel device can be controlled by the degradation of copolymer. To prove the simulations, the cumulative release of the protein from the complex gel was investigated in vitro and in vivo experiment.</p>		