


高分子科学系列讲座

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报告时间	6月13日上午9:00	报告地点	主楼四楼学术报告厅(410室)
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报告人背景	<p>黄庆荣博士现任美国新泽西州罗格斯大学(Rutgers University)食品科学系教授(Professor I)。他于2002年建立美国第一个食品纳米实验室。他的团队致力于食品高分子与纳米功能食品研究,通过应用基础学科的理论及实验手段,例如高分子物理及化学、胶体化学、材料化学、分析化学、生物化学、药理学、营养学,并结合食品化学及食品工程的知识,解决了天然产物低溶解度,低载量,低生物活性和低生物可利用率等一系列难题。目前在纳米功能食品和营养方面的工作处于国际领先水平,多次被国立卫生研究院(NIH),食品工程师学会(IFT),美国化学会(ACS),美国油脂化学家学会(AOCS)等邀请为学术讲座主讲人,并担任《胶体与界面科学新进展》期刊的特邀编辑。</p>		
			
报告题目	Structure, Self-Assembly and New Applications of Corn Protein Zein		
内 容 摘 要	<p>Zein is a corn prolamin which has broad industrial applications because of its unique structure and physical properties. Currently, the high cost of extraction and purification, which is directly related to the dispersion of zein in different solvents, is the major bottleneck of the zein industry. In addition, the physical nature of zein in different solvents remains unclear. In this study, small-angle X-ray scattering (SAXS), static light scattering (SLS) and rheology were combined to study the structure and protein-solvent interaction of alpha-zein in both acetic acid and aqueous ethanol solutions. We found that the like-dissolve-like rule, the partial unfolding and the protonation of zein are all critical to understand the solution behaviors. Zein holds an elongated conformation (i.e., prolate ellipsoid) in all solutions as revealed from SAXS data. There is an “aging effect” for zein in aqueous ethanol solutions, as evidenced by the transition of Newtonian rheological profiles for fresh zein solutions to the non-Newtonian shear thinning behavior for zein solutions after storage at room temperature for 24 h. Such shear thinning behavior becomes more pronounced for zein solutions at higher concentrations. The SLS results clearly show that acetic acid is a better solvent to dissolve zein than aqueous ethanol solution, as supported by a more negative second virial coefficient. In terms of new applications, the use of zein in the fabrication of edible films, food packaging materials, highly-aligned nutraceutical-loaded zein fibers, and “sensor-on-packaging” device etc. will also be discussed.</p>		