

Seminar

*Making better biomaterials:
Examples of seeking interdisciplinary approaches*

10:30AM-12:00AM

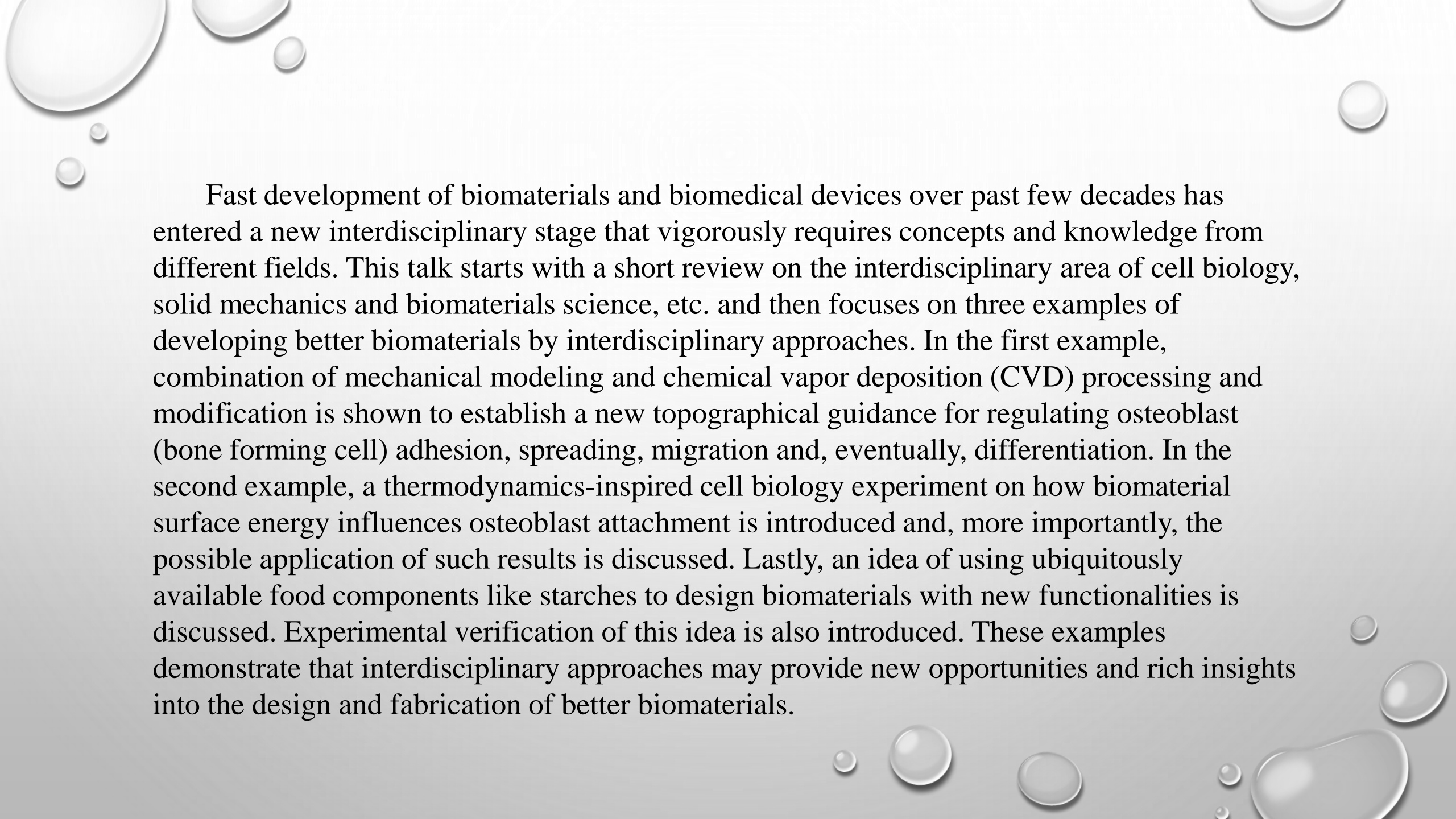
东一号楼报告厅

Wednesday, Sep 17, 2014



杨磊教授，分别于2004年、2006年取得清华大学材料科学与工程系学士、硕士学位，2011年于美国常春藤布朗大学（Brown University）取得工学博士及创新与创业管理学硕士学位。2011至2012年在布朗大学工学院任博士后、讲师。2012年9月回国任职于苏州大学骨科研究所，受聘为特聘教授、博士生导师。

杨磊博士主要从事骨科生物材料的研究。截至2013年3月，杨磊博士共计发表一作论文20余篇、中国授权专利4项；获得美国Sigma Xi 学会“125位青年科学家”奖（2011年）、美国生物材料学会（SFB）最佳博士生奖（2011年）、美国材料学会（MRS）博士生银奖（2010年）、中国国家优秀自费留学生奖学金（2010年）、布朗大学工学院优秀博士论文（2011年）、清华大学优秀硕士毕业生及毕业论文（2006年）等奖励；担任了27个国际学术期刊的审稿人，担任国际会议分会主席3次、大会主席1次。



Fast development of biomaterials and biomedical devices over past few decades has entered a new interdisciplinary stage that vigorously requires concepts and knowledge from different fields. This talk starts with a short review on the interdisciplinary area of cell biology, solid mechanics and biomaterials science, etc. and then focuses on three examples of developing better biomaterials by interdisciplinary approaches. In the first example, combination of mechanical modeling and chemical vapor deposition (CVD) processing and modification is shown to establish a new topographical guidance for regulating osteoblast (bone forming cell) adhesion, spreading, migration and, eventually, differentiation. In the second example, a thermodynamics-inspired cell biology experiment on how biomaterial surface energy influences osteoblast attachment is introduced and, more importantly, the possible application of such results is discussed. Lastly, an idea of using ubiquitously available food components like starches to design biomaterials with new functionalities is discussed. Experimental verification of this idea is also introduced. These examples demonstrate that interdisciplinary approaches may provide new opportunities and rich insights into the design and fabrication of better biomaterials.