课程名（Coursename）  
Advances in Polymers  
  
课程代码（Coursenumber）  
L 4  
  
课程对象（Audience）  
Graduates  
  
开课教师（Teacher）  
Prof. W. T. S. Huck  
  
学期（Semester）  
  
课程描述（Description）  
The chemistry and uses of polymers have undergone a revolution in the last 10 years. The development of new synthetic routes, has enabled an amazing level of control over the size, shape, and properties of synthetic polymers. This course will look in detail at modern methods for controlled synthesis of polymers, with an emphasis on ‘living’ polymerisations and the preparation of block copolymers and their properties. Alternative synthetic routes based on self-assembly of both polymeric and monomeric building blocks will be discussed.  
The resulting structures have interesting applications as nanoparticles or biomaterials and the course will highlight recent research into the formation of well-defined nanostructured materials of a wide range of shapes and dimensions. This section of the course will also include other uses of polymers in ‘soft’ nanotechnology and nanolithography. Finally, semiconducting, conjugated polymers have been pioneered in Cambridge and their synthesis and uses in polymer LEDs, solar cells and transistors will be covered in depth. To ensure that the course is accessible to those who have not done the Part II course Introduction to Polymers, we will start with a short introduction on the fundamentals of polymer chemistry and physics.  
Topics Introduction  
Synthetic methods  
Block copolymers  
Dendrimers and hyperbranched polymers  
Polymer superstructures  
Biomaterials  
Supramolecular polymers  
Conjugated polymers and applications  
Soft nanotechnology and nanolithography  
  
课时信息（Totalhours）  
  
教参信息（Textbookinfo）  
1 Spectrometric Identification of Organic Compounds by Robert M. Silverstein, Francis X. Webster,            and David Kiemle (Hardcover - Jan. 14, 2005)  
ISBN-13: 978-0471393627  
世界各地拥有馆藏的图书馆（OCLC）:421  
2 Structure Determination of Organic Compounds: Tables of Spectral Data by Ernö Pretsch, Philippe Bühlmann, and Martin Badertscher (Paperback - Apr. 23, 2009)  
ISBN-13: 978-3540938095  
世界各地拥有馆藏的图书馆（OCLC）:82  
3 The Systematic Identification of Organic Compounds by Ralph L. Shriner, Christine K. F. Hermann, Terence C. Morrill, and David Y. Curtin (Paperback - Dec. 9, 2008)  
ISBN-13: 978-0471215035  
世界各地拥有馆藏的图书馆（OCLC）:318  
4 Crystallization of Organic Compounds: An Industrial Perspective by Hsien-Hsin Tung, Edward L. Paul, Michael Midler, and James A. McCauley (Hardcover - June 9, 2009)  
ISBN-13: 978-0471467809  
世界各地拥有馆藏的图书馆（OCLC）:66  
5 Modern Organic Synthesis in the Laboratory by Jie Jack Li, Chris Limberakis, and Derek A. Pflum (Paperback - Sept. 10, 2007)  
 ISBN-13: 978-0195187991  
世界各地拥有馆藏的图书馆（OCLC）:332  
6 Organic Structure Determination Using 2-D NMR Spectroscopy: A Problem-Based Approach (Advanced Organic Chemistry) by Jeffrey H. Simpson (Paperback - July 24, 2008)  
ISBN-13: 978-0120885220  
世界各地拥有馆藏的图书馆（OCLC）:329  
7 The Synthetic Organic Chemist's Companion by Michael C. Pirrung (Paperback - July 10, 2007)  
ISBN-13: 978-0470107072  
世界各地拥有馆藏的图书馆（OCLC）:457  
8 Organic Synthesis: The Disconnection Approach by Stuart Warren and Paul Wyatt (Paperback - Jan. 14, 2009)  
ISBN-13: 978-0470712368  
世界各地拥有馆藏的图书馆（OCLC）:177  
9 Organic Structure Analysis (Topics in Organic Chemistry) by Phillip Crews, Jaime Rodriguez, and Marcel Jaspars (Hardcover - Oct. 29, 2009)  
ISBN-13: 978-0195336047  
世界各地拥有馆藏的图书馆（OCLC）:118  
10 Workbook for Organic Synthesis: The Disconnection Approach by Stuart Warren and Paul Wyatt (Paperback - Jan. 19, 2010)  
ISBN-13: 978-0470712269   
世界各地拥有馆藏的图书馆（OCLC）:35  
11 Environmental Organic Chemistry by Rene P. Schwarzenbach, Philip M. Gschwend, and Dieter M. Imboden (Paperback - June 15, 2002)  
ISBN-13: 978-0471357506  
世界各地拥有馆藏的图书馆（OCLC）:387