



香港城市大學
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Development of Visualization-Oriented Physical Chemistry Courses

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Abstract:

Through this project, I will establish effective pedagogy of teaching both fundamental and practical aspects of physical chemistry. Despite the critical and ever-rising importance of physical chemistry within chemistry as well as within practical research activities such as those in industry, physical chemistry generally does not attract many students within a short time frame because of its theoretical nature. The basic assumption that I have in this project is that physical chemistry courses can be taught effectively with visual tools that give students an intuitive understanding of learning contents. In this project, I intend to establish a pedagogical methodology whereby physical chemistry courses are taught using software products and computers in intuitively understandable manners. For this purpose, commercial and free software packages for graphics, molecular visualization, and docking simulation will be introduced and utilized. Through the visualization-oriented pedagogy, students will gain an intuitive yet in-depth understanding of theoretical concepts. Given the fact that the concepts of physical chemistry underlie all kinds of chemistry, this visualization-oriented pedagogy will also help students understand other chemistry courses in depth and develop critical thinking and logical reasoning skills. Another goal of this project is to achieve high-quality teaching by offering a computational drug design course, in which students can learn how to use several useful software packages pertaining to drug discovery. This computational drug design course will help students understand how theoretical concepts in physical chemistry are playing central roles in enhancing the quality of human life.