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The Research of Glucose Oxidation and Coating Process based on the Photophysical and Catalytic Properties of Gold Nanorods[1] XIAOMENG WANG, LI MA, XIAOJUN WANG, Georgia Southern Univ, GUIYE SHAN, Northeast Normal Univ — Gold nanomaterials have attracted many researchers attention in the area of bio sensor and bio image because of their unique property of plasmon dependent optical response characteristic. Gold nano rods show a highly dependence between their optical physical property and their size, shape, and composition. Au NRs show two strong localized plasmon resonance absorption peaks within the visible to the infrared range. Transverse surface plasmon resonance, and localized surface plasmon resonance. The LSPR peak of gold nanorods is very sensitive to the surrounding medium and the change of rods aspect ratio. The position of LSPR would change correspondingly based on the variation of surrounding medium or rods aspect ratio. Therefore, detecting the change of gold nanorods morphology as well as the reaction process is achievable by detecting the change of their LSPR peak position. Besides, due to the catalytic property of gold nano rods, new chemicals can be formed under the catalysis process of gold nanorods. Generally, it needs extreme reaction conditions for small glucose molecules to polymerize into glucan. However, specificgold nanorods can exhibit strong catalytic ability, and provide glucose a possibility to polymerize into glucan even under room temperature.

[1]Georgia Southern University

Xiaomeng Wang
Georgia Southern Univ

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