Gold Nanoparticle-Based Biosensor for the Rapid and Simple Detection of Heavy-metal Ion

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In this study, gold nanoparticle-based biosensor is developed using glutathione(GST) attached on gold surface and glutathione S-transferase(GSH) attached on quantum dot (QD). GSH played a crucial role in capturing heavy metal ion and bonding GST molecule through enzymatic interaction. Using these phenomena, we detected Pb2+ in water sample through quenching-dequenching effect of gold nanoparticle-QD caused competitive interaction about Pb2+ -GSH-GST. In conclusion, we present a label-free, rapid and simple detection of Pb2+ using coupling property of GSH. **Acknowledgments:** This research was supported by the Original Technology Research Program for Brain Science through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2009-0093907), and a part of the project titled "Development of Sustainable Remediation Technology for Marine Contaminated Sediments" funded by the Ministry of Land, Transport and Maritime Affairs, Korea, and by the Ministry of Knowledge Economy(MKE) and Korea Institute for Advancement in Technology (KIAT) through the Workforce Development Program in Strategic Technology.