

## Chemical and Electrochemical Preparations of Metal Nanoparticles Protected by Ionic Liquids

차종호, 김기섭, 최숙정, 이 혼\*  
한국과학기술원  
(h\_lee@kaist.ac.kr\*)

Ionic liquids (ILs) have received much attention from nano-material areas. ILs feature a good stabilization or solvatization of molecular species and high thermal stability. Moreover, both the length of side chain of cation and the specifically designed anion can be easily controlled for various uses. These desirable characteristics facilitate the application of ILs to the stabilizers in preparation of metal nanoparticles. In our previous study, we newly synthesized thiol-functionalized ionic liquids (TFILs) by attaching a thiol groups to conventional ILs and successfully prepared highly size-selective TFIL-protected metal nanoparticles. Although our suggestion for TFILs was advantageous to synthesize metal nanoparticles, however, some problems to resolve are still remained. The TFIL synthesis is complicated because of its multi-step synthetic procedure and therefore its reproducibility decreases. Moreover, the odor of raw materials is unpleasant. Herein, we suggest new stabilizers based on a morpholinium and an imidazolium cation which can effectively protect metal nanoparticles without attaching a thiol group to IL. As a result, we successfully synthesized metal nanoparticles by both chemical and electrochemical processes.