

### Fabrication of Heterogeneous Multilayer Films onto Flat and Colloidal Substrates

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Ultrathin organic/organic or organic/inorganic multilayer films prepared by the versatile layer-by-layer (LbL) assembly method have been utilized for the preparation of light-emitting diodes, electrochromic, membrane, and drug delivery system as well as for selective area patterning and particle surface modification because the various materials with specific properties can be inserted into the film with nano-level thickness irrespective of the size or the shape of substrate.

In this study, we prepare the polyelectrolyte/polyelectrolyte or polyelectrolyte/metal nanoparticle multilayer films onto flat and colloidal substrates using layer-by-layer self-assembly method and investigate the specific interactions between adjacent layers for the build-up of multilayer films. Furthermore, it is suggested that these multilayer films showing unique optical and electrical properties can be applied to various applications such as optically active colloidal particles, electrochemical sensors or anti-reflection films.