

# Preparation and Electrochemistry of Layer-by-Layer Films of NiGa Layered Double Hydroxide Nanosheets

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## Abstract:

In this study, we investigated the synthesis, delamination of NiGa Layered Double Hydroxides (LDH) and electrochemistry of multilayer films of NiGa LDH nanosheets and ferricyanide molecules prepared by Layer-by-Layer (LBL) method. Hydrothermal synthesis with agitation at 200°C for 4h resulted in well-crystallized and oval-shaped NiGa LDHs in shorter time than those synthesized without agitation. The NiGa LDH was delaminated into nanosheets by formamide. Height analysis according to AFM image gives an approximate value of 0.71 nm, which was almost in full agreement with the theoretical thickness of a single LDH host layer. Electrochemical behavior of thin multilayer films of NiGa LDH nanosheets and ferricyanide molecules fabricated by LBL method was investigated. The cyclic voltammograms of multilayer films in 0.1M K<sub>2</sub>SO<sub>4</sub> solution are similar to potassium metal hexacyanoferrate systems with its unique two-peak wave due to the two different forms of the hexacyanoferrate in the interlayer.

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