New methods for preparing mercury-based ferrofluids

Metallic ferrofluids based on magnetic particles in mercury have been produced by two new methods. Alloy particles of Fe-B, Fe-Co-B, Fe-Ni-B, and Co-B were prepared by reduction of the transition metal ions in aqueous solutions by NaBH4 and subsequently suspended in mercury. In one preparation, the metallic mercury was added to the solution with precipitates and in another method produced simultaneously with the precipitates by reduction of mercury ions to metallic mercury. The samples were characterized by magnetization and Mössbauer spectroscopy measurements. Journal of Applied Physics is copyrighted by The American Institute of Physics.