Dysprosium (Dy^{3+}) metal recovery from simulated permanent magnet waste using N-(phosphonomethyl)-iminodiacetic acid-functionalized GO

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Given the low concentration of dysprosium (Dy) in ores, its recovery from secondary waste such as waste electrical and electronic equipment is highly important. In this paper, we report the functionalization of graphene oxide with N-(phosphonomethyl)- iminodiacetic acid for the development of a Dy^{3+}- selective adsorbent. The composite material was characterized using FTIR, TGA, UV, and EA. Batch adsorption experiments reveal that the sequestration of Dy^{3+} by the composite material is best embodied by the Langmuir isotherm and follows pseudo-second-order kinetics. Adsorption capacity is optimal at pH 6 and equilibrium is achieved in less than 6 hours.