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## Abstract

This research work has carried out to investigate cheap, cost effective, and simple in terms of its methods, stable synthesis of bimetallic Ti/Ni composite and high adsorption capacity strategy for the removal of azo dyes. That's why new modified Ti/Ni composite supported on functional bentonite clay was synthesized. The synthesis of these NPs was confirmed by different characterization techniques like Particle size analyzer, UV-Vis, SEM and XRD. The diameter of these NPS was found below 50nm. The affinity of Ti/Ni-B NPs towards azo dyes was checked and results showed that 27.2 % MO dye, 66 % MB dye and 77 % MG dye removal was achieved within 120 minutes. The research work examined the difference between the % removal efficiency of Ti/Ni and Ti/Ni-B and found that 23% and 77% removal of MG dye was achieved respectively. The optimal conditions for parameters were observed as; at pH 8, 68% and within the time interval of 120 minutes 77% removal of MG dye, at 40mg/L, 91% removal of MG dye and at 3ml of 50.wt. % solution, 95% methyl green dye from the solution was achieved. The results provide evident that new modified bimetallic Ti/Ni-B catalyst was an efficient and cost effective method for the removal of azo dyes.