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环境科学

土壤及其组分对表面活性剂Tween80的吸附作用及影响因素

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摘要:

采用批量实验方法研究土壤及其组分对Tween80的吸附作用及影响因素, 并分析了土壤吸附Tween80的机制. 结果表明: 原土（S1和S2）和去除有机质的土壤样品（S3和S4）对Tween80吸附的热力学过程均随着平衡质量浓度的增加而增加, 并且逐渐趋于平衡; 整个吸附热力学过程更符合Langmuir模型; 土壤有机质和矿物质是吸附Tween80的重要物质, 矿物质对吸附Tween80的作用更大, 而且土壤对Tween80的吸附作用依赖于二者的结合; 土壤样品及其组分对Tween80的吸附量随着温度和初始质量浓度的增加而增加, 随着pH值的升高而降低; 土壤及其组分对Tween80的吸附能力及其在同一条件下的吸附量大小为S4>S3>S1>S2.

关键词: 土壤; 土壤组分; 表面活性剂; Tween80; 吸附

Adsorption of Nonionic Surfactant Tween80 by Soils and Soil Components and Effect of Influencing Factors

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Abstract:

The adsorption of Tween80 onto soils and their component samples (S1,S2,S3,S4), and effect of the environmental influencing factors on it were studied by the batch equilibration method, and the adsorption mechanisms of Tween80 were also investigated in this study. The experimental results show that the adsorption of Tween80 on the original soil samples (S1,S2) and their respective organic matter extracted soil samples (S3,S4) increased with the increase of the equilibrium concentration of Tween80 andgradually tended to equilibrium . The isotherms of it fitted to the Langmuir equation better. The organic matter and minerals of soils were important components to adsorb Tween80, the soil minerals had a stronger affinity for Tween80, and the adsorption of Tween80 was mainly depended on their combination . The adsorption amount of Tween80 on soil and their component samples increased with the increase of its initial concentration and temperature, but decreased with pH increasing. And the adsorption maximum capacities of soil and their component samples under the same condition followed the order of S4>S3>S1>S2.

Keywords: soil soil compontent surfactant Tween80 adsorption

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