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Zeolite synthesis in basic media using expanded perlite and its application in Rhodamine B adsorption.

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Abstract: In this work, expanded perlite was employed as a Si and Al source in zeolite synthesis. The products obtained were mixtures of three zeolitic topologies identified by X-ray diffraction and scanning electron microscopy. The zeolite OFF presented elongated prism morphology and the zeolites GIS and ERI appeared as crystal intergrowths. The products and the expanded perlite were used in a Rhodamine B adsorption study. The zeolitic mixture turned out to be a better adsorber than the expanded perlite, obtaining an efficiency of 90% up to 2 minutes and an equilibrium efficiency of 72% after 5 minutes.

Keywords: Perlite, mineral, zeolite synthesis, adsorption, Rhodamine B.

Introduction

Zeolites are microporous materials synthesized from saturated aqueous solutions of T^{III} and T^{IV} cations, generally Si and Al, under predetermined pressure and temperature conditions [1, 2]. The different topologies are identified with a three letter code standardized by the International Zeolite Association (IZA) [3]. By varying the composition of the solution (or gel) and the operating conditions, zeolites with different chemical compositions and structural characteristics are obtained. Among the synthetic methodologies, the hydrothermal synthesis

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