

# New methods of bentonite activation and their efficiency in the regeneration of used lubricating oils.

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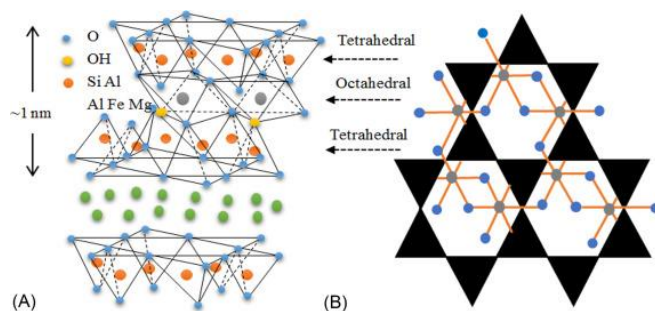
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Bentonite is well known for its adsorbent properties, low cost, and high exchange capacity [1]. To improve these physic-chemical parameters, in this study, bentonite has undergone acid and basic treatment combining with microwave curing [2,3]. A comparison of the structure of the bentonite before and after activation was made to see and evaluate the changes in bentonite structure. The bentonite was tested for its regeneration efficiency on used motor oils, UMO (used for 15000-20000km). Some of the main parameters measured for evaluating the quality of lubricating oils are: density, sulfur content, viscosity, viscosity index, pour point, etc. Purification of UMO by activated bentonite gives higher results and is more economical and ecological than other methods used before.

[1] Mukherjee, Swapna. n.d. *The Science of Clays*. 1st ed. Springer Dordrecht: Springer Nature

[2] Carrado, K. A., and P. Komadel. 2009. "Acid Activation of Bentonites and Polymer-Clay Nanocomposites." *Elements*, no. 2 (April): 111–16.  
<https://doi.org/10.2113/gselements.5.2.111>.

[3] Petrović, Srdjan, Ljiljana Rožić, Zorica Vuković, Tatjana Novaković, and Dragomir Stanisavljev. 2012. "Response Surface Optimization for Activation of Bentonite Using Microwave Irradiation." *Clays and Clay Minerals*, no. 1 (February): 32–39.  
<https://doi.org/10.1346/ccmn.2012.0600103>.



**Figure 1:** Structure of montmorillonite.