Sorption Properties of Natural and Synthetic Materials

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Due to human dependency on oil, it is constantly being drilled for. Safety precautions are used while drilling, but some oil still ends up in the ocean. These accidents cause harmful damage to the environment and wildlife. Different types of sorbents may being used to cleanup an oil spills. Which material out of cotton, kapok, polypropylene, and aerogel, will have the best oil sorption capacity, water repellency, and reusability? Kapok was hypothesized to have a better oil sorption capacity, reusability, and water repellency than the other materials. 1000 mg of water was poured in a tub, then 100 mg of oil was poured over the water. Five g of polypropylene was weighed and placed in the solution, and left in the solution for fifteen minutes. The polypropylene was extracted and weighed using a scale. The polypropylene was then squeezed to extract the solution into test tubes and they were placed in a centrifuge to separate the oil and water. The amount of water and oil still left in the polypropylene was determined. These steps were repeated with kapok, cotton, and aerogel. These steps were repeated by the same cotton, kapok, aerogel, and polypropylene to test reusability, and the data was analyzed. Based on data collected, the hypothesis that kapok will have the best oil sorption capacity, water repellency, and reusability can be accepted.

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