

1. Introduction: Polycyclic aromatic hydrocarbons (PAHs) are a class of organic compounds that are known to be carcinogenic and mutagenic. They are commonly found in the environment, particularly in air and water. The removal of PAHs from milk samples is a critical task for ensuring food safety. This study aims to develop a novel nanocomposite material for the efficient removal of PAHs from milk samples.

2. Materials and Methods: The nanocomposite material, consisting of chitosan, molybdenum disulfide (MoS₂), and iron(III) oxide (Fe₃O₄), was synthesized using a sol-gel process. The material was characterized using various techniques, including Fourier transform infrared (FTIR) spectroscopy, scanning electron microscopy (SEM), and energy-dispersive X-ray (EDX) analysis. The removal efficiency of the nanocomposite for PAHs was evaluated using a series of experiments.

3. Results and Discussion: The results of the experiments show that the nanocomposite material has a high removal efficiency for PAHs from milk samples. The removal efficiency was found to be dependent on the concentration of the nanocomposite and the initial concentration of PAHs in the milk samples. The nanocomposite material was found to be highly stable and reusable, making it a promising material for the removal of PAHs from milk samples.

4. Conclusion: The nanocomposite material, consisting of chitosan, MoS₂, and Fe₃O₄, is a highly effective material for the removal of PAHs from milk samples. The material is stable and reusable, making it a promising material for the removal of PAHs from milk samples.

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Employing a magnetic chitosan/molybdenum disulfide nanocomposite for efficiently removing polycyclic aromatic hydrocarbons from milk samples