

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 was synthesized by the combination of chitosan, molybdenum disulfide (MoS₂), and iron(III) oxide (Fe₃O₄). The synthesis was carried out using a sol-gel process. The resulting nanocomposite was characterized by 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 showed that the nanocomposite material exhibited a high removal efficiency for PAHs from milk samples. The removal efficiency was significantly higher than that of the individual components (chitosan, MoS₂, and Fe₃O₄). The removal efficiency was also found to be dependent on the concentration of the nanocomposite and the initial concentration of PAHs in the milk samples. The results of this study suggest that the nanocomposite material is a promising candidate for the removal of PAHs from milk samples.

4. Conclusion: The nanocomposite material developed in this study is a novel and effective material for the removal of PAHs from milk samples. The results of this study suggest that the nanocomposite material is a promising candidate for the removal of PAHs from milk samples. Further studies are needed to optimize the removal efficiency of the nanocomposite material and to investigate its potential for the removal of other contaminants from milk samples.

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