ACTIVATED CARBONS FROM CHERRY STONES: A GREEN STRATEGY FOR ORGANIC POLLUTANTS PHOTODEGRADATION .

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Activated carbons (ACs) stand out as a prominent class of materials known for their high porosity, high surface area, and readily tunable surface chemistry. Their ability to effectively sorb a wide range of substances makes them valuable in various industrial applications. Various precursors can be employed in the production of ACs, ranging from non- renewable sources (coal and petroleum coke) to renewable ones as agricultural biomasses. In particular, cherry stones have emerged as a particularly promising candidate due to their inherent composition and structure. The choice of activation method significantly affects the pore size distribution, surface area, and surface chemistry of the resulting AC, ultimately impacting its performance in specific applications [1]. Steam activation is a widely employed physical activation method, environment friendly and able to provide ACs with high surface areas and well-developed pore structures. By carefully controlling the steam concentration during the activation process, it is possible to finely tune the AC's characteristics to align with the specific requirements of targeted applications [2]. This study investigates the steam activated synthesis of ACs from cherry stones, employing a method with varying steam dosages, to elucidate the outcome of steam activation on the feature of the resulting ACs and correlate these changes with their performance in photodegradation experiments. Hence, we employed a multifaceted characterization approach. NMR relaxometry was utilized to provide detailed insights into the pore size distribution and surface characteristics of the ACs [3]. In addition, we studied the degradation of model dyes XY & YZ in presence of AC under halogen lamp to evaluate the photodegradation abilities of the synthesized ACs, with regard to emerging pollutants. By combining the insights derived from NMR relaxometry and photodegradation experiments, this study aims to provide a comprehensive understanding of how controlled steam activation can be be exploited to tailor the properties of cherry stone-derived ACs for enhanced performance in photocatalytic applications.

References

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