

Lecture 10. Carbon aerogel from waste cabbage

Cai et al. (Cai et al., 2018) synthesized nitrogen-doped 3D network porous carbon aerogels by using cabbages as the raw materials through hydrothermal, freeze-drying, and carbonization processes (Fig. 1). These aerogels had a hierarchical 3D network porous structure and shown a high-performance as electrode materials for supercapacitors, as well as high adsorption capacity and recyclability for different organic solvents and oils.

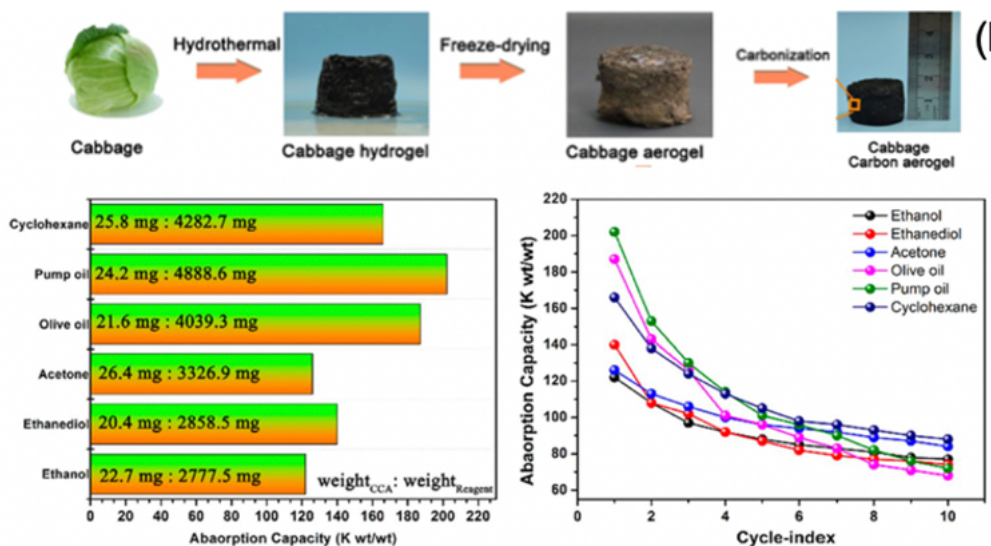


Fig. 1. Schematic illustration of the formation process of cabbage-derived carbon aerogels.

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Literatures

1. Lesbayev B., Auyelkhanzy M, Ustayeva G., Yeleuov M., Rakhymzhan N., Maltay A., Maral Ye. (2023) Recent advances: Biomass-derived porous carbon materials. *South African Journal of Chemical Engineering* 43:327–336. DOI:10.1016/j.sajce.2022.11.012.
2. Lesbayev B., Auyelkhanzy M., Ustayeva G., Yeleuov M., Rakhymzhan N., Maral Y., Tolyzbekov A. (2023) Modification of Biomass-Derived Nanoporous Carbon with Nickel Oxide Nanoparticles for Supercapacitor Application, *Journal of Composites Science*, 7:20, doi.org/10.3390/jcs7010020
3. Cai, T., Wang, H., Jin, C., Sun, Q., Nie, Y., 2018. Fabrication of nitrogen-doped porous electrically conductive carbon aerogel from waste cabbage for supercapacitors and oil/water separation. *J. Mater. Sci. Mater. Electron.* 29, 4334–4344. <https://doi.org/10.1007/s10854-017-8381-5>