ISGC 2019
May 13th - 17th

N°1064 / PC
TOPIC(s) : Biomass conversion

Comparison of physical and chemical properties of activated carbon derived from woody biomass

AUTHORS

Jun-Ho CHOI / DEPARTMENT OF WOOD SCIENCE AND ENGINEERING, COLLEGE OF AGRICULTURE & LIFE SCIENCES, CHONNAM NATIONAL UNIVERSITY, 77 YONGBONG-RO, BUK-GU, GWANGJU
Joah HAN / DIVISION OF ENERGY& ENVIRONMENTAL MATERIALS, KOREA INSTITUTE OF CERAMIC ENGINEERING & TECHNOLOGY, 101, SOHO-RO, JINJU-SI, GYEONGSANGNAM-DO
Kwang Chul ROH / DIVISION OF ENERGY& ENVIRONMENTAL MATERIALS, KOREA INSTITUTE OF CERAMIC ENGINEERING & TECHNOLOGY, 101, SOHO-RO, JINJU-SI, GYEONGSANGNAM-DO
Corresponding author : Jae-Won LEE / ljw43376@chonnam.ac.kr

PURPOSE OF THE ABSTRACT

The development of eco-friendly energy generation systems and energy-saving technology has attracted attention for replacing fossil fuels, which are the main causes of greenhouse gases. Supercapacitors have been used as the high-efficiency electric energy saving device in the energy industry. Supercapacitor properties differ depending on the structural and electrochemical properties of activated carbon, which is the electrode material. Till now, coconut shell has been used for activated carbon preparation. However, it is difficult to improve the performance because of the problems of raw material supply and activation. Therefore, the interest in eco-friendly precursor alternatives to coconut shell has increased. Woody biomass has a porous structure and is available at a low cost. Thus, woody biomass can be used as a suitable electrode material.

In this study, we prepared activated carbon by using unused woody biomass for supercapacitors. The physical and electrochemical properties of the activated carbon were analyzed depending on biomass. Moreover, we compared the pore structural properties of the activated carbon prepared by the carbonization and alkali activation processes.

FIGURES

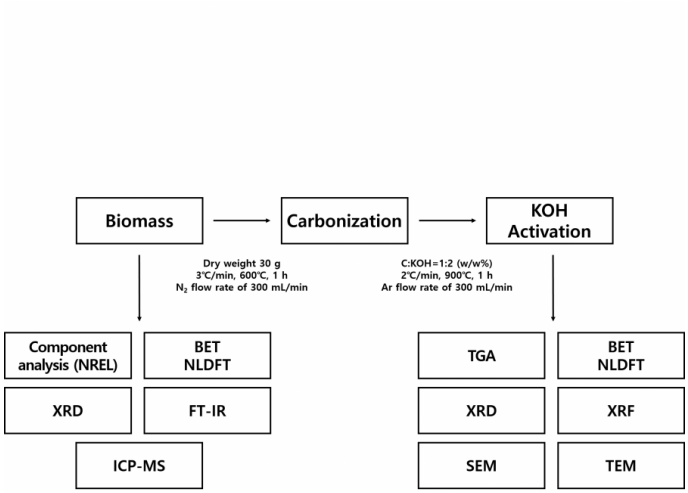

FIGURE 1

Figure 1.

Process and analysis method of activated carbon using biomass

FIGURE 2

KEYWORDS

Biomass | Activated carbon | Supercapacitor

BIBLIOGRAPHY

[1] X. He, P. Ling, J. Qiu, M. Yu, X. Zhang, C. Yu, M. Zheng., j. Power Source. 2013, 240, 109-113

[2] A.M. Abioye, F.N. Ani., j. Renew Sustain Energy Rev. 2015, 52, 1282-1293

[3] H. Chen, D. Liu, Z. Shen, B. Bao, S. Zhao, L. Wu., j. Electrochim. Acta. 2015, 180, 241-251

[4] J. Han, S.Y. Jeong, J.H. Lee, J.W. Choi, J.W. Lee, K.C. Roh., j. ACS Sustainable Chem. Eng. 2019, 7, 2471-2482