

Accepted Manuscript

Title: Preparation and characterization of porous carbons from ion-exchange resins with different degree of cross-linking for hydrogen storage

Author: Young-Woo You Eun-Hee Moon Iljeong Heo Hosik Park Ji-Sook Hong Jeong-Kwon Suh



PII: S1226-086X(16)30340-9
DOI: <http://dx.doi.org/doi:10.1016/j.jiec.2016.09.019>
Reference: JIEC 3086

To appear in:

Received date: 27-7-2016
Revised date: 9-9-2016
Accepted date: 12-9-2016

Please cite this article as: Y.-W. You, E.-H. Moon, I. Heo, H. Park, J.-S. Hong, J.-K. Suh, Preparation and characterization of porous carbons from ion-exchange resins with different degree of cross-linking for hydrogen storage, *Journal of Industrial and Engineering Chemistry* (2016), <http://dx.doi.org/10.1016/j.jiec.2016.09.019>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1 Preparation and characterization of porous carbons from ion-exchange resins with
2 different degree of cross-linking for hydrogen storage

3

4 Young-Woo You^a, Eun-Hee Moon^a, Iljeong Heo^a, Hosik Park^b, Ji-Sook Hong^c, Jeong-
5 Kwon Suh^{a*} jksuh@kRICT.re.kr

6

7 ^aCarbon Resources Institute, Korea Research Institute of Chemical Technology, 141
8 Gajeong-ro, Yuseong-gu, Daejeon 305-600, Republic of Korea

9 ^bAdvanced Materials Division, Korea Research Institute of Chemical Technology, 141
10 Gajeong-ro, Yuseong-gu, Daejeon 305-600, Republic of Korea

11 ^cTechnology Commercialization Division, Korea Research Institute of Chemical
12 Technology, 141 Gajeong-ro, Yuseong-gu, Daejeon 305-600, Republic of Korea

13 *Corresponding author. Tel.: +82 42 860 7334

14

15 Abstract

16 Porous carbons are prepared using ion-exchange resins with three different degree of
17 cross-linking for hydrogen storage. The degree of resin cross-linking has little effect on
18 the specific surface area and microporosity of the carbon; however, mesoporosity
19 increases significantly with decreases in the degree of cross-linking. Porous carbon
20 prepared from low cross-linked resin (4% cross-linking) shows a mesopore volume of
21 $0.92 \text{ cm}^3/\text{g}$, which is 77% higher than that from 12% cross-linked resin. The prepared
22 carbons are used for hydrogen storage. It is found that total micropore volume is a
23 major contributor to the high hydrogen adsorption observed at 200 bar.

24

25

26 Keywords

27 Porous carbon; Ion-exchange resin; degree of cross-linking; Carbonization; Hydrogen
28 storage

Download English Version:

<https://daneshyari.com/en/article/6669144>

Download Persian Version:

<https://daneshyari.com/article/6669144>

[Daneshyari.com](https://daneshyari.com)