

REFERENCES

- Agag, T., and Takeichi, T. (2007) High-molecular-weight AB-type benzoxazines as new precursors for high-performance thermosets. Journal of polymer Science: Part A: Polymer Chemistry, 45, 1878-1888.
- Azaïs, P., Duclaux, L., Florian, P., Massiot, D., Lillo-Rodenas, MA., Linares-Solano, A., Peres, JP., Jehoulet, C., and Béguin, F. (2007) Causes of supercapacitors ageing in organic electrolyte. Journal of Power Sources, 171, 1046-1053.
- Biesmans, G., Mertens, A., Duffours, L., Woignier, T., and Phalippou, J. (1998) Polyurethane based organic aerogels and their transformation into carbon aerogels. Journal of Non-crystalline Solids, 225, 64-68.
- Brousse, T., Taberna, PL., Crosnier, O., Dugas, R., Guillement, P., Scudeller, Y., Zhou, Y., Favier, F., Bélanger, D., and Simon, P. (2007) Long-term cycling behavior of asymmetric activated carbon/MnO₂ aqueous electrochemical supercapacitor. Journal of Power Sources, 173, 633-641.
- Brunovska, Z., Liu, J.P., and Ishida, H. (1999) 1,3,5-Triphenylhexahydro-1,3,5-triazine-active intermediate and precursor in the novel synthesis of benzoxazine monomers and oligomers. Macromolecule Chemical Physics, 200, 1745-1752.
- Burke, W.J. (1949) 3,4-dihydro-1,3,2H-benzoxazines. reaction of p-substituted phenols with N,N-dimethylolamines. Journal of the American Chemical Society, 71, 609-612.
- Burke, W.J., Bishop, J.L., Glennie, E.L.M., and Bauer, W.N. (1965) A new aminoalkylation reaction. Condensation of phenols with dihydro-1,3-oxazines. Journal of Organic Chemistry, 30, 3423-3427.
- Conway, B.E. (1991) Transition from capacitors to battery behavior in electrochemical energy storage. Journal of the Electrochemical Society, 138(6), 1539-1548.
- Dandekar, M.S., Arabale, G., and Vijayamohan, K. (2005) Preparation and characterization of composite electrodes of coconut-shell-based activated carbon and hydrous ruthenium oxide for supercapacitors. Journal of Power

Sources, 141, 198-203.

- Du, X., Wang, C., Chen, M., Jiao, Y., and Wang, J. (2009) Electrochemical performances of nanoparticle Fe₃O₄/activated carbon supercapacitor using KOH electrolyte solution. Journal of Physical Chemistry Part C, 113, 2643-2646.
- Dunkers, J. and Ishida, H. (1995) Vibrational assignments of N,N-bis(3,5-dimethyl-2-hydroxybenzyl)methylamine in the fingerprint region. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 51, 1061-1074.
- Fairén-Jiménez, D., Carrasco-Marín, F., and Moreno-Castilla, C. (2006) Porosity and surface area of monolithic carbon aerogels prepared using alkaline carbonates and organic acids as polymerization catalyst. Carbon, 44, 2301-2307.
- Fang, B. and Binder, L. (2006) A modified activated carbon aerogel for high-energy storage in electrical double layer capacitors. Journal of Power Sources, 163, 616-622.
- Fischer, U., Saliger, R., Bock, V., Petricevic, R., and Fricke, J. (1997) Carbon aerogels as electrode material in supercapacitors. Journal of Porous Materials, 4, 281-285.
- Frackowiak, E. (2007) Carbon materials for supercapacitor application. Physical Chemistry Chemical Physics, 9, 1774-1785.
- Frackowiak, E., and Béguin, F. (2001) Review Carbon materials for the electrochemical storage of energy in capacitors. Carbon, 39, 937-950.
- Fu, R., Zheng, B., Liu, J., Dresselhaus, M.S., Dresselhaus, G., Satcher, J.H., Jr., and Baumann, T.F. (2003) The fabrication and characteristic of carbon aerogels by gelation and supercritical drying in isopropanol. Advanced Functional Materials, 13, 558-562.
- Gamby, J., Taberna, P.L., Simon, P., Fauvarque, J.F., and Chesneau, M. (2001) Studies and characteristics of various activated carbons used for carbon/carbon supercapacitors. Journal of Power Sources, 101, 109-116.

- Ghosh, N.N., Kiskan, B., and Yagci Y. (2007) Polybenzoxazines — New high performance thermosetting resins: Synthesis and properties. Progress in Polymer Science, 32, 1344-1391.
- He, X., Lei, J., Geng, Y., Zhang, X., Wu, M., and Zheng, M. (2009) Preparation of microporous activated carbon and its electrochemical performance for electric double layer capacitor. Journal of Physics and Chemistry of Solids, 70, 738-744.
- Holly, F.W., and Cope, A.C. (1944) Condensation products of aldehydes and ketones with o-aminobenzyl alcohol and o-hydroxybenzylamine. Journal of the American Chemical Society, 66, 1875–1879.
- Honda, Y., Haramoto, T., Takeshige, M., Chiozaki, H., Kitamura, T., and Ishikawa, M. (2007) Aligned MWCNT sheet electrodes prepared by transfer methodology providing high-power capacitor performance. Electrochemical and Solid State Letters, 10, A106-A110.
- Hsieh, C. and Teng, H. (2002) Influence of oxygen treatment on electric double-layer capacitance of activated carbon fabrics. Carbon, 40, 667-674.
- Hwang, S.W. and Hyun, S.H. (2004) Capacitance control of carbon aerogel electrode. Journal of Non-Crystalline Solids, 347, 238-245.
- Hwang, S.W., and Hyun, S.H. (2007) Synthesis and characterization of tin oxide/carbon aerogel composite electrodes for electrochemical supercapacitors. Journal of Power Sources, 172, 451-459.
- Ingram, M.D., Pappin, A.J., Delalande, F., Poupard, D., and Terzulli, G. (1998) Development of electrochemical capacitors incorporating processable polymer gel electrolytes. Electrochimica Acta, 43, 1601-1605.
- Ishida, H. US Patent 5, 543, 516, assigned to Edison Polymer Innovation Corporation.
- Ishida, H., and Allen, D. (1996) Physical and mechanical characterization of near-zero shrinkage polybenzoxazines. Journal of Polymer Science: Part B: Polymer Physics, 34, 1019–1030.
- Ishikawa, M., Sakamoto, A., Morita, M., Matsuda, Y., and Ishida, K. (1996) Effect of treatment of activated carbon fiber cloth electrodes with cold plasma

- upon performance of electric double-layer capacitors. Journal of Power Sources, 60, 233-238.
- Kalpana, D., Omkuma, K.S., Suresh Kumar, S., and Renganathan, N.G. (2006) A novel high power symmetric ZnO/carbon aerogel composite electrode for electrochemical supercapacitor. Electrochimica Acta, 52, 1309-1315.
- Katanyoota, P., Chaisuwan, T., Wongchaisuwat, A., and Wongkasemjit, S. (2010) Novel polybenzoxazine-based carbon aerogel electrode for supercapacitors. Journal of Materials Science and Engineering B, 167, 36-42.
- Kim, S.J., Hwang S.W., and Hyun S.H. (2005) Preparation of carbon aerogel electrodes for supercapacitor and their electrochemical characteristics. Journal of Material Science, 40, 725-731.
- Lee, J.K. (2006). Polyurea aerogels, US Patent # 0211840 A1.
- Lee, S.J., Jeong, J.R., Shin, S.C., Kim, J.C., and Kim, J.D. (2004) Synthesis and characterization of superparamagnetic maghemite nanoparticles prepared by coprecipitation technique. Journal of Magnetism and Magnetic Materials, 282, 147-150.
- Lee, Y.L., Jung, J.C., Park, S., Seo, J.G., Baek, S.H., Yoon, J.R., Yi, J., and Song, I.K. (2010) Preparation and characterization of metal-doped carbon aerogel for supercapacitor. Journal of Current Applied Physics, 10, 947-951.
- Li, W., and Guo, S. (2000) Preparation of low-density carbon aerogels from a cresol /formaldehyde mixture. Carbon, 38, 1499-1524.
- Li, W., Pröbstle, H., and Fricke, J. (2003) Electrochemical behavior of mixed CmRF based carbon aerogels as electrode materials for supercapacitors. Journal of Non-Crystalline Solids, 325, 1-5.
- Li, W., Rechenauer, G., and Fricke, J. (2002) Carbon aerogels derived from cresol–resorcinol–formaldehyde for supercapacitors. Carbon, 40, 2955-2959.
- Li, J., Wang, X., Wang, Y., Huang, Q., Dai, D., Gamboa, S., and Sebastian, P.J. (2008) Structure and electrochemical properties of carbon aerogels synthesized at ambient temperatures as supercapacitors. Journal of Non-Crystalline Solids, 354, 19-24.

- Liu, J. Ph.D. (1995) Synthesis, characterization, reaction mechanism and kinetics of 3,4-dihydro-2H-1,3-benzoxazine and its polymers. Thesis, Case Western Reserve University, Cleveland OH.
- Liu, X., Kaminski, M.D., Guan, Y., Chen, H., Liu, H., and Rosengart, A.J. (2006) Preparation and characterization of hydrophobic superparamagnetic magnetite gel. Journal of Magnetism and magnetic materials, 306, 248-253.
- Liu, X., Zhang, R., Zhan, L., Long, D., Qiao, W., Yang, J., and Ling, L. (2007) Impedance of carbon aerogel/activated carbon composites as electrodes of electrochemical capacitors in aprotic electrolyte. New Carbon Materials, 22, 153-158.
- Meng, Q.H., Liu, L., Song, H.H., Zhang, R., and Ling, L.C. (2004) Electrochemical properties of carbon aerogels electrode for super-capacitor. Journal of Inorganic Materials, 19(3), 593-598.
- Momma, T., Liu, X., Osaka, T., Ushio, Y., and Sawada, Y. (1996) Electrochemical modification of active carbon fiber electrode and its application to double-layer capacitor. Journal of Power Sources, 60, 249-253.
- Ning, X., and Ishida, H. (1994) Phenolic materials via ring-opening polymerization-synthesis and characterization of bisphenol-a based benzoxazines and their polymers. Journal of Polymer Science: Part A: Polymer Chemistry, 32, 1121-1129.
- Pekala, R.W., Alviso, C.T., Kong, F.M., and Hulsey, S.S. (1992) Aerogels derived from multifunctional organic monomers. Journal of Non-crystalline Solids, 145, 90-98.
- Porawee, K., Chaisuwat, T., Wongchaisuwat, A., and Wongkasemjit, S. (2010) Novel polybenzoxazine-based carbon aerogel electrode for supercapacitors. Journal of Materials Science and Engineering B, 167, 36-42.
- Prabaharan, S.R.S., Vimala, R., and Zainal, Z. (2006) Nanostructured mesoporous carbon as electrodes for supercapacitors. Journal of Power Sources, 161, 730-736.
- R. de Levie. (1963) On Porous Electrodes in Electrolyte Solutions.

Electrochimica Acta, 8, 751-780.

- Saliger, R., Fischer, U., Herta, C., and Fricke, J. (1998) High surface area carbon aerogel for supercapacitors. Journal of Non-crystalline Solids, 225, 81-85.
- Sepehri, S., García, B.B., Zhang, Q., and Cao, G. (2009) Enhanced electrochemical and structural properties of carbon cryogels by surface chemistry alteration with boron and nitrogen. Carbon, 47, 1436-1443.
- Takeichi, T., Kano, T., and Agag, T. (2005) Synthesis and thermal cure of high molecular weight polybenzoxazine precursors and the properties of the thermosets. Polymer, 46, 12172-12180.
- Tamon, H., Ishizaka, H., Araki, T., and Okazaki, M. (1998) Control of mesoporous structure of organic and carbon aerogels, Carbon, 36, 1257-1262.
- Tamon, H., Ishizaka, H., Mikami, M. and Okazaki, M. (1997) Porous structure of organic and carbon aerogels synthesized by sol-gel polycondensation of resorcinol with formaldehyde. Carbon, 35, 791-796.
- Wei, Y.-Z., Frang, B., Iwasa, S., and Kumagai, M. (2005) A novel electrode material for electric double-layer capacitors. Journal of Power Sources, 141, 386-391.
- Wu, D., and Fu, R. (2005) Fabrication and physical properties of organic and carbon aerogel derived from phenol and furfural. Journal of Porous Materials, 12, 311-316.
- Wu, N.L., Wang, S.Y., Han, C.Y., Wu, D.S., and Shiue, H.R. (2003) Electrochemical capacitor of magnetite in aqueous electrolytes. Journal of Power sources, 113, 173-178.
- Wang, J., Yang, X., Wu, D., Fu, R., Dresselhaus M.S., and Dreaaelhaus G. (2008) The porous structures of activated carbon aerogels and their effects on electrochemical performance. Journal of Power Sources, 185, 589-594.
- Wang, J., Zhang, S.Q., Guo, Y.Z., Shen, J., Attia, S.M., Zhou, B., Zheng, G.Z., and Gui, Y.S. (2001) Morphological effects on the electrical and electrochemical properties of carbon aerogels. Journal of the Electrochemical Society, 148, D75-D77.

- Wang, S.Y., and Wu, N.L. (2003) Operating characteristics of aqueous magnetite electrochemical capacitors. Journal of Applied Electrochemistry, 33, 345-348.
- Xia, K., Gao, Q., Jiang, J., and Hu, J. (2008) Hierarchical porous carbons with controlled micropores and mesopores for supercapacitor electrode materials. Carbon, 46, 1718-1726.
- Yazdania, F., and Edrissi M. (2010) Effect of pressure on the size of magnetite nanoparticles in the coprecipitation synthesis. Materials Science and Engineering B, 171, 86-89.
- Zhang, R., Lu, Y., Zhan, L., Liang, X., Wu, G., and Ling, L. (2002) Monolithic carbon aerogels from sol-gel polymerization of phenolic resoles and methylolated melamine. Carbon, 41, 1645-1687.

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2. Hongsumreong, P.; Wongkasemjit, S.; and Chaisuwan, T. (2011, April 26) Morphological and Electrochemical Study of Iron Oxide/Carbon Xerogel Nanocomposites for Supercapacitor. Proceedings of the 2nd National Symposium on Petroleum, Petrochemicals, and Advances Materials and the 17th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.

Presentations:

1. Hongsumreong, P.; Wongkasemjit, S.; and Chaisuwan, T. (2011, March 27-31) Supercapacitors from Hybrid Composites of Nanoporous Carbon and Iron Oxide. Paper presented at the 241st ACS National Meeting & Exposition, Anaheim, CA, USA.
2. Hongsumreong, P.; Wongkasemjit, S.; and Chaisuwan, T. (2011, April 26) Morphological and Electrochemical Study of Iron Oxide/Carbon Xerogel Nanocomposites for Supercapacitor. Paper presented at the 2nd National Symposium on Petroleum, Petrochemicals, and Advances Materials and 17th PPC Symposium on Petroleum, Petrochemicals, and Polymers, Bangkok, Thailand.