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A Review on the Synthesis of CuCo2O4 Based Electrode Material and their Application in Supercapacitors

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Abstract: *Supercapacitors joined of the most promising energy storage systems are extensively studied due to their unique merits, like long-term cycling stability, fast charge rate, and low maintenance cost. it's widely known that the electrochemical performances of supercapacitors are closely associated with the structure and specific extent of the electrode materials. Therefore, many sorts of research are focused on the planning and synthesis of electrode materials with novel shapes and huge surface areas. CuCo2O4 has recently attracted enormous research interest because of the electrode materials for supercapacitors as a result of its inherent advantages including high theoretical capacity, environmental friendliness, natural abundance, and low cost. In practical applications, the CuCo2O4 still suffers from some drawbacks; for example, poor conductivity, relatively low specific capacity, and poor cycling durability. Hence, a comprehensive summary of the recent progress of CuCo2O4-based materials is critical and significant to higher understand the opportunities and challenges that such materials face. during this work, the progress of preparation methods and electrochemical performances of CuCo2O4-based materials is comprehensively reviewed. The aim of this review is to focus on a number of the advances made by CuCo2O4-based electrode materials for supercapacitors and guide future research toward closing the gap between achieved and theoretical capacity, without limiting the loading mass.*

Keywords: CuCo2O4; Composites; Porous materials; Electrochemical performance; Supercapacitors

REFERENCES

[1]. J.P. Holdren, Energy, and sustainability, Science 315 (2007) 737-738. 2)
[2]. G.Z. Chen, Supercapacitor, and supercar battery as emerging electrochemical energy stores. Int. Mater. Rev. 62 (2017) 173-202. 3)
[3]. Z. Yang, J. Zhang, M.C.W. Kintner-Meyer, X. Lu, D. Choi, J.P. Lemmon, J. Liu, Electrochemical energy storage for the green grid, Chem. Rev. 111 (2011) 3577-3613.
[4]. A. Pendashteh, S.E. Moosavifard, M.S. Rahmanifar, Y. Wang, M.F. Elkady, R.B. Kaner, M.F. Mousavi, Highly ordered mesoporous CuCo2O4 nanowires, a promising solution for high-performance supercapacitors, Chem. Mater. 27 (2015) 3919-3926.
[5]. S. Vijayakumar, S.H. Lee, K.S. Ryu, Hierarchical CuCo2O4 nanobelts as a supercapacitor electrode with high areal and specific capacitance, Electrochim. Acta 182 (2015) 979-986.
[6]. L. Abbasi, M. Arvand, Engineering hierarchical ultrathin CuCo2O4 nanosheets array on Ni foam by rapid electrodeposition method toward high-performance binder-free supercapacitors, Appl. Surf. Sci. 445 (2018) 272-280.