

Green Synthesis of CuO@PVA by *lavandulifolia* s Extract and development of hydrogen storage capacity

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Today, due to the depletion of fossil fuel resources and the high importance of energy in developed and developing countries, scientists are looking for environmentally friendly, cheap, safe, and high energy density alternatives. Hydrogen, as a clean and environmentally friendly energy, has a high energy density, which promises to reduce or eliminate fossil fuels that pollute the environment [1]. Hydrogen, as a clean and environmentally friendly energy, has a high energy density, which promises to reduce or eliminate fossil fuels that pollute the environment. Using hydrogen energy is really the most effective strategy to deal with the problems of energy exhaustion and the environmental pollution. Many new method and new topic for hydrogen-energy process chain and hydrogen economics, such as one-step approach towards hydrogen production, storage and transportations have been investigated [2-5]. In this work, PVA/CuO nanostructures organized with *Stachys lavandulifolia* extract have been used in hydrogen storage due to the importance of hydrogen storage and green synthesis of nanoparticles. The synthesized PVA/CuO nanostructures have been characterized by using XRD, FT-IR and their morphology, Morphology are investigated with SEM. The use of polymeric surfactants (PVA) increased the hydrogen storage capacity from 1100mAh/g (for synthesized without surfactant) to 3000 mAh/g and also improved the Columbic efficiency from 55 to 75%.

Keywords: CuO, Hydrogen storage, CuO@PVA

References

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