Sustainable Na-ion batteries for stationary applications

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The increased usage of renewable power sources underlines the importance of developing diversified systems that satisfy the requirements of safety and low costs [1]. In this perspective, the high earth abundance of sodium in combination with aqueous electrolytes make Na-ion batteries a promising technology for stationary energy storage systems [2,3]. This study focuses on the selection of binders for the preparation in aqueous environment of electrodes for sodium ion cells operating in aqueous solutions. We demonstrated the feasibility of chitosane-based binder to produce freestanding electrodes for Na-ion cell, avoiding the use of organic solvents, fluorinated polymers and current collectors. To our knowledge, it is the first time that the use of water-processed, free-standing electrodes are used in aqueous Na-ion batteries. This could be an interesting development in terms of sustainability for Na-ion batteries, taking into account low risks for health and environment, and low manifacturing costs.

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