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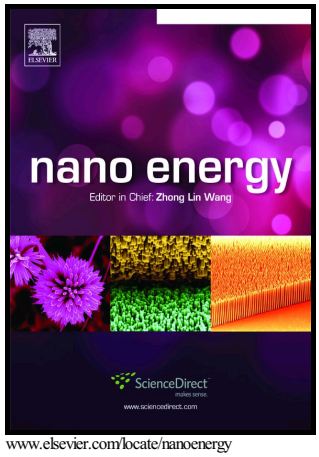

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Feng Wu[a,b], Na Zhu[a], Ying Bai[a,*], Yu Li[a], Zhaohua Wang[a], Qiao Ni[a], Huali Wang[a], Chuan Wu[a,b,*]

[a]Beijing Key Laboratory of Environmental Science and Engineering, School of Materials Science and Engineering, Beijing Institute of Technology, Beijing 100081, PR China

[b]Collaborative Innovation Center of Electric Vehicles in Beijing, Beijing 100081, PR China

*Corresponding author: Phone: (+86)-10-68912528. E-mail: membrane@bit.edu..cn(Y.B.).

*Corresponding author: Phone: (+86)-10-68912657. E-mail: chuanwu@bit.edu.cn(C.W.).

ABSTRACT:

Sodium-ion batteries (SIBs) are gaining more attentions due to their potentials to achieve large scale energy storage coupled with relatively low cost. However, typically used organic electrolytes with high flammability and poor thermal stability have impeded the further developments for SIBs in large-scale energy storage. Ionic liquids (ILs), featuring excellent thermal stability, non-flammability and wide electrochemical window have been promising alternative electrolytes for SIBs. Herein, rechargeable $Na/Na_3V_2(PO_4)_3$ cells with $NaPF_6$-incorporated 1-butyl-3-methylimidazolium bis (trifluoromethanesulfonyl) imide BMITFSI IL electrolyte are demonstrated to reduce the flammability of the electrolyte and