Poly(amic acid) Lithium Salt as a Multi-Functional Binder for High Performance Lithium/Sulfur Battery Cathodes

Guomin Zhao^{1,2}, Runwen Zhang^{3,*}, Guangji Xu¹ and Shuang Jin¹

¹ School of Energy and Safety Engineering, Tianjin Chengjian University Tianjin 300384, China.

² Tianjin Key Laboratory of Civil Structure Protection and Reinforcement, Tianjin 300384, China.

³ Tianjin Institute of Power Sources, Tianjin 300381, China.

*E-mail: zhangrunwen23@163.com

doi: 10.20964/2019.09.11

Received: 2 April 2019 / Accepted: 19 June 2019 / Published: 31 July 2019

Water-soluble poly(amic acid) lithium (PAALi) salts were firstly used as the binders for lithium/sulfur battery. Benefiting plenty functional groups (amide and carboxylate), S@PAALi cathodes with sulfur loading of ca. 8.0 mg cm⁻² showed excellent performance compared to the conventional polymer binders (such as PVDF): initial capacities > 1200 mAh g⁻¹ and with > 84% retention after 130 cycles. This research provides a new approach to improving lithium-sulfur batteries by designing multi-functional binders.

Keywords: Lithium/sulfur battery; Water-soluble binder; Poly(amic acid) lithium; Electrochemistry

[FULL TEXT](#)

© 2019 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).