

Abstract Submitted  
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**Electrochemiluminescent Ion Gels for DC-Driven, Sub-2V Solid-State Emissive Devices by Incorporating Redox Coreactants<sup>1</sup>** HONG CHUL MOON, TIMOTHY P. LODGE, C. DANIEL FRISBIE, University of Minnesota — We have demonstrated a solid-state DC-driven electrochemiluminescent (ECL) device using a solution processable, emissive ECL gel based on polystyrene-block-poly(methyl methacrylate)-block-polystyrene (SMS) and 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide ([EMI][TFSI]). Tetrabutylammonium oxalate (TBAOX) was incorporated into the ECL gel for a coreactant strategy. Oxalate can be viewed as a consumable fuel for the device providing reducing power and cutting the overall operating voltage. The device was fabricated by a simple two-step solution process. Application of 1.6 V DC bias across the device resulted in the onset of light emission. The maximum luminance was achieved at 1:5 mole ratio of ECL luminophore (Ru(bpy)<sub>3</sub>(PF<sub>6</sub>)<sub>2</sub>) and TBAOX, and the turn-on voltage was independent of the composition. The simplicity of the ECL device and its low voltage operation characteristics make it potentially attractive as a display element for printed electronics.

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Hong Chul Moon  
University of Minnesota

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