

Electronic Supplementary Information

Ionic liquid-mediated electrochemiluminescent sensor
for the detection of sulfur dioxide in the ppb-level

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Table S1. Characteristics of various SO₂ gas sensors

Method	Detection range	Detection limit	Operating temperature	References
The proposed ECL sensor	40 ~ 2000 ppb	20 ppb	Room temperature	
Surface acoustic wave		< 200 ppb	160 °C	1
Solid state electrolyte	1 ~ 50 ppm	1 ppm	300 °C	2
Severinghaus type potentiometric sensor	20 ~ 1000 ppb	20 ppb	Room temperature	3
Quartz crystal microbalance	~ ppm range	5 ppm	35 °C	4
Absorption spectroscopy		0.2 ppm per meter	Room temperature	5
Fiber-optic sensor	2 ~ 150 ppm	2 ppm	Room temperature	6
Fluorescence	0.1 ~ 1600 ppm	20 ppb	Room temperature	7
Field-effect transistor	0.25 ~ 1.8 %	0.05 %	Room temperature	8

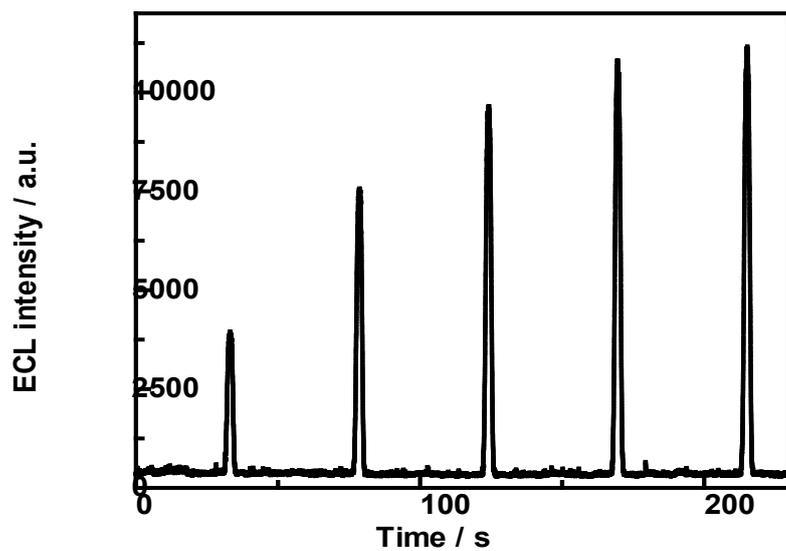


Figure S1. ECL response of IL-mediated Ru(bpy)₃²⁺/O₂ system obtained by consecutively scanning the potential of the working electrode between -1.0 and 1.3 V. The potential scan rate was 100 mV/s.

References

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