Supporting Information

Carbon dioxide gas sensor based on ionic liquid-induced electrochemiluminescence

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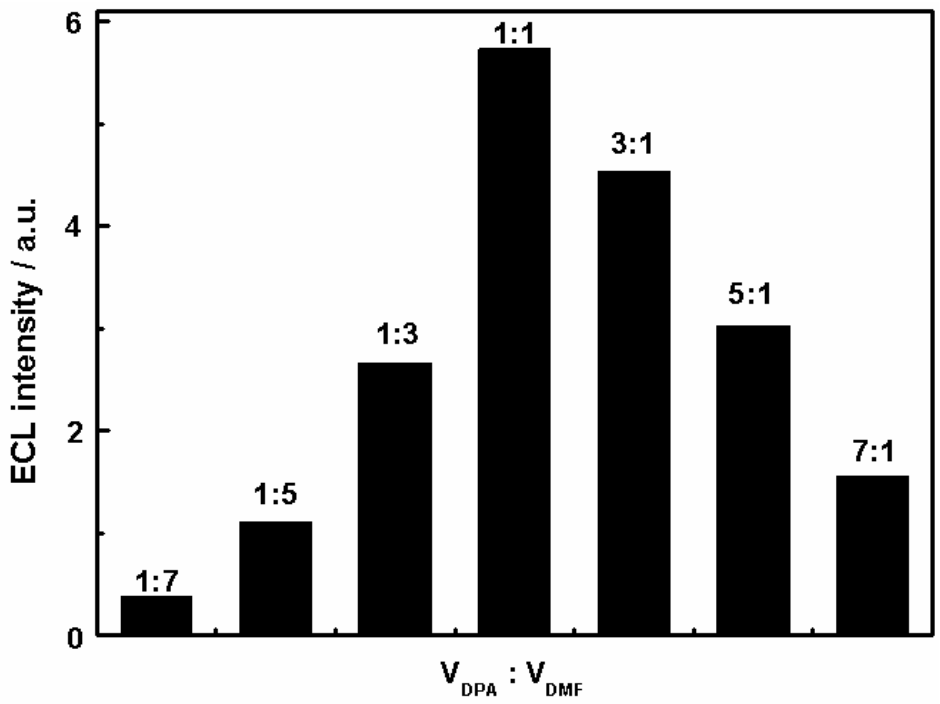

Figure S1. Dependence of the ECL response of the CO_2 gas sensor on the volume ratio of DPA toDMF.

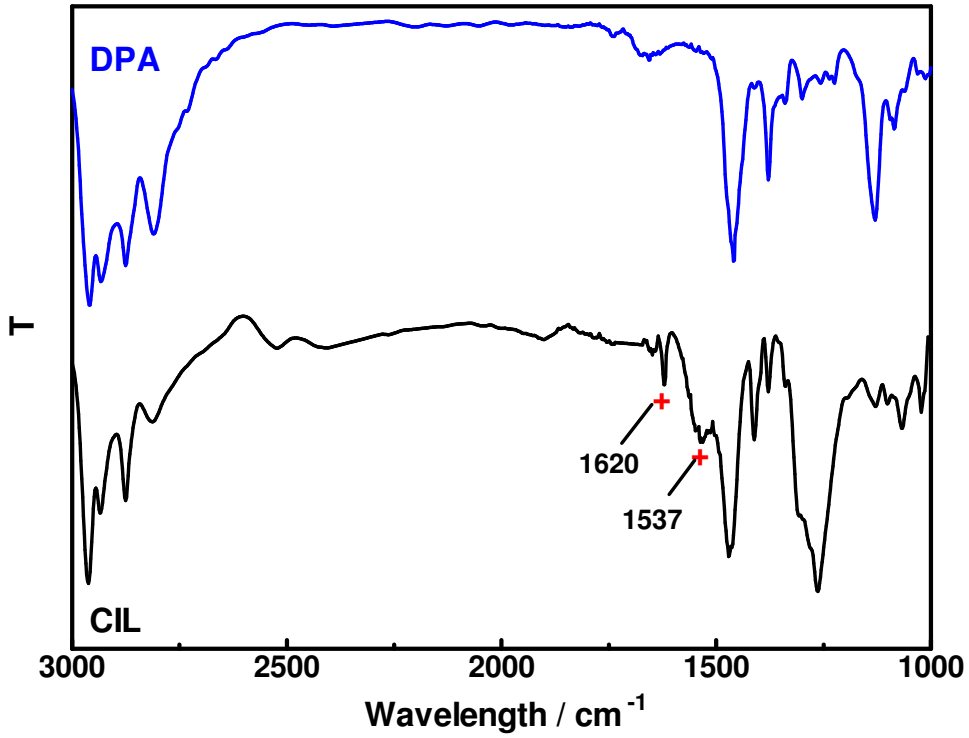

Figure S2. The IR spectra of DPA before (a) and after (b) treatment with CO_2.

Table S1. Comparison of the ECL-based CO_2 gas sensor with other types of CO_2 gas sensors

Method	Detection range	Detection limit	Operating temperature	Reference
ECL-based sensor	100 ppm ~ 100%	80 ppm	Room temperature	Present
Severinghaus-type potentiometric sensor	1.38% ~ 11.37%		Room temperature	I
FTIR	0.05 ~ 2000 ppm	0.05 ppm	Room temperature	II
Fiber-optic sensor	2000 ppm ~100%	2000 ppm	Room temperature	III
Fluorescence	800 ppm ~ 100%	800 ppm	Room temperature	IV
Solid-state electrolyte	6 ppm ~ 100%	6 ppm	600°C	V
Field-effect transistor	500 ppm ~ 10%	500 ppm	Room temperature	VI

References

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(VI) Star, A.; Han, T. –R.; Joshi, V.; Gabriel, J. –C. P.; Grüner, G. *Adv. Mater.* **2004**, *16*, 2049-2052.

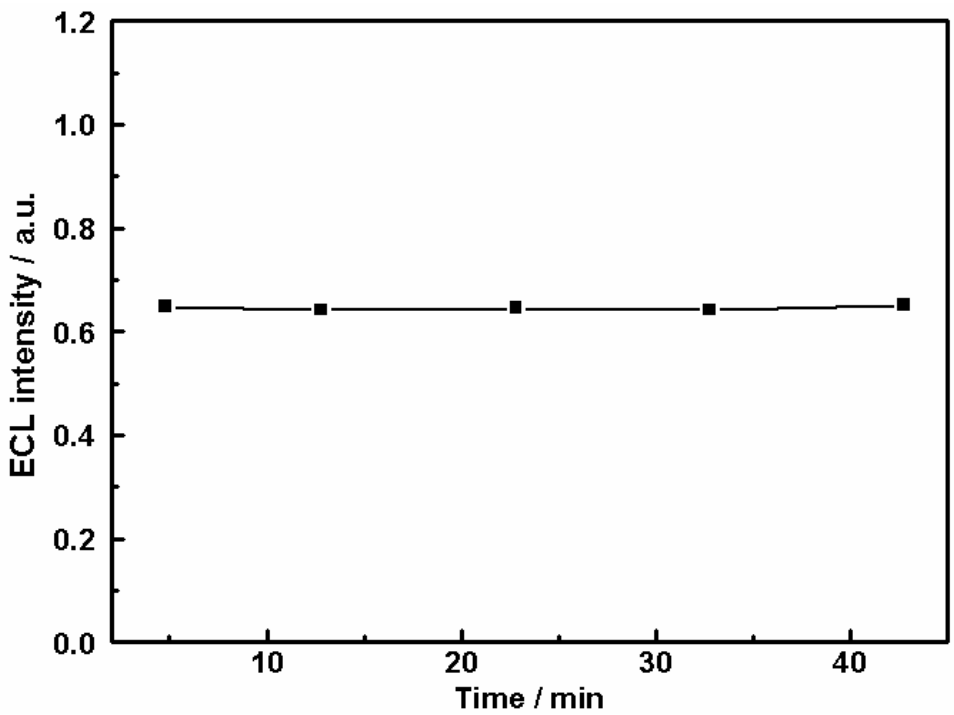

Figure S3. ECL intensity obtained for 10 v/v% CO_2 upon exposing the sensing solution to the flowing gases for various time. Gases were passed through the sensor with the fixed rate of 150 mL.h^{-1} in the following turn: 5 mL N_2, 2 mL 10 v/v% CO_2, various volumes of N_2 (0, 20, 45, 70, 95 mL), and 5 mL simulated air.

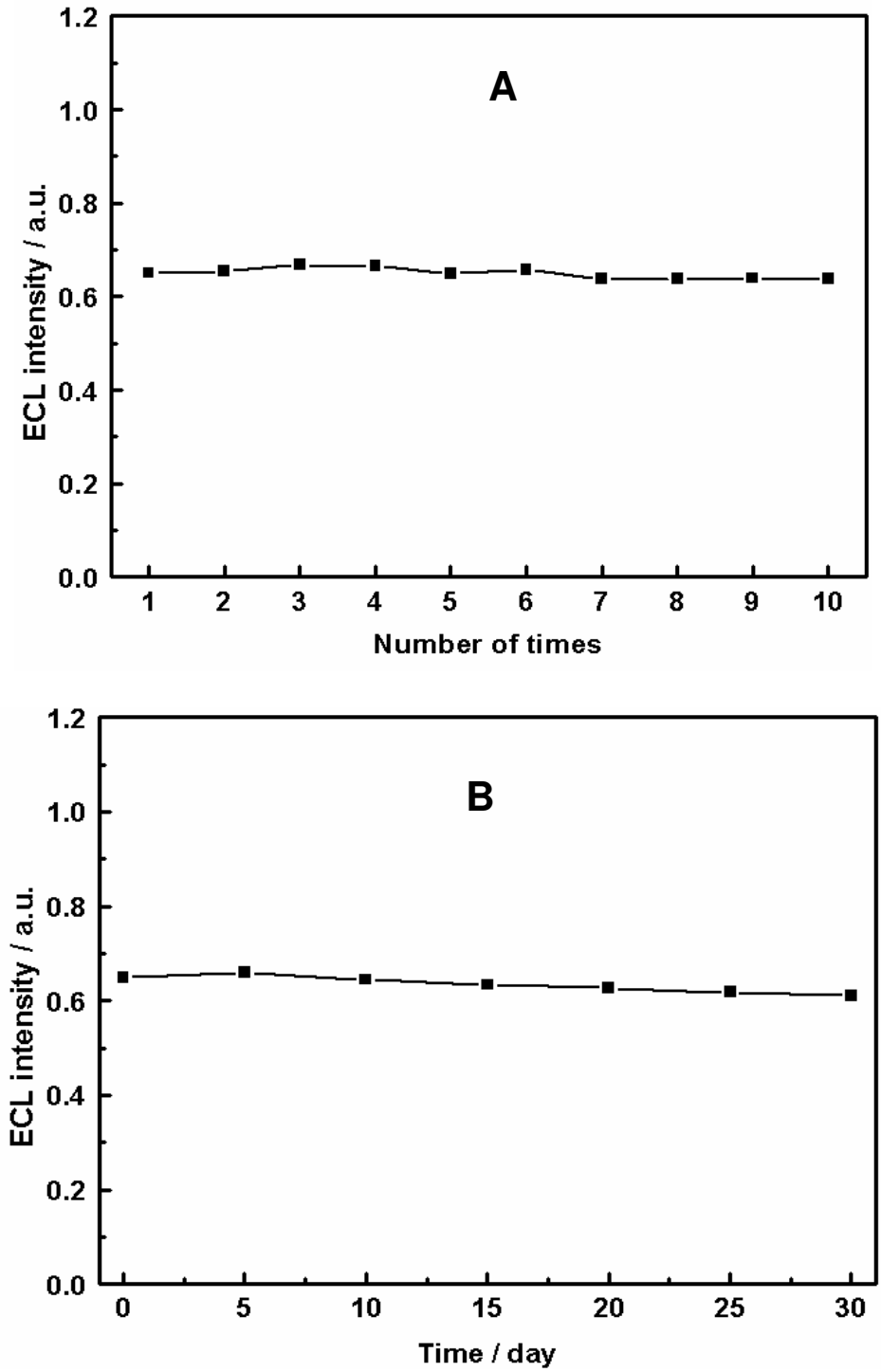

Figure S4. The reproducibility of the ECL-based sensor for the detection of 10 v/v% CO_2 during 10 times of measurements (A); and the long-term stability observed for the ECL-based sensor for 10 v/v% CO_2 (B).

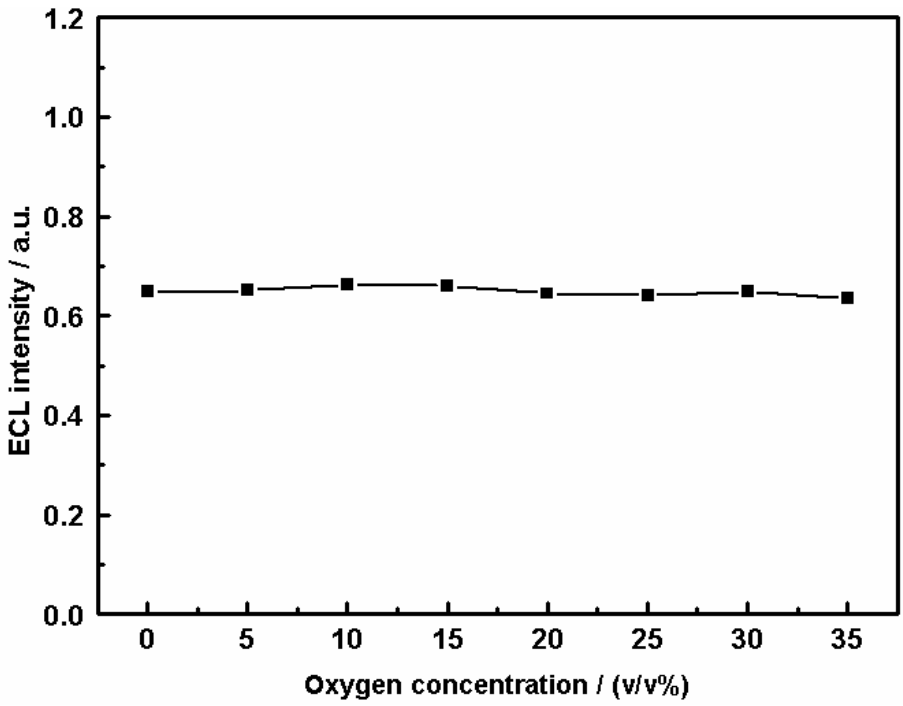

Figure S5. ECL intensity obtained for 10 v/v% CO_2 in the presence of various oxygen concentrations (v/v%)of sample gas.