

3-Pentadecyl-2,4-dioxo-16-crown-5 as a promising additive in electrolytes for chemical power sources

Anna A. Slesarenko, Guzaliya R. Baymuratova, Igor K. Yakuschenko,
Galiya Z. Tulibaeva, Alexander F. Shestakov and Ol'ga V. Yarmolenko

Contents

Figure S1 Structure of 3-pentadecyl-2,4-dioxo-16-crown-5	S1
Table S1 Chemical analysis data for compound 1	S1
Figure S2 ^1H NMR spectrum for compound 1	S2
Figure S3 ^{13}C NMR spectrum for compound 1	S2
Table S2 Parameters of the equivalent circuit calculated for the hodographs of Li // Li cells	S3

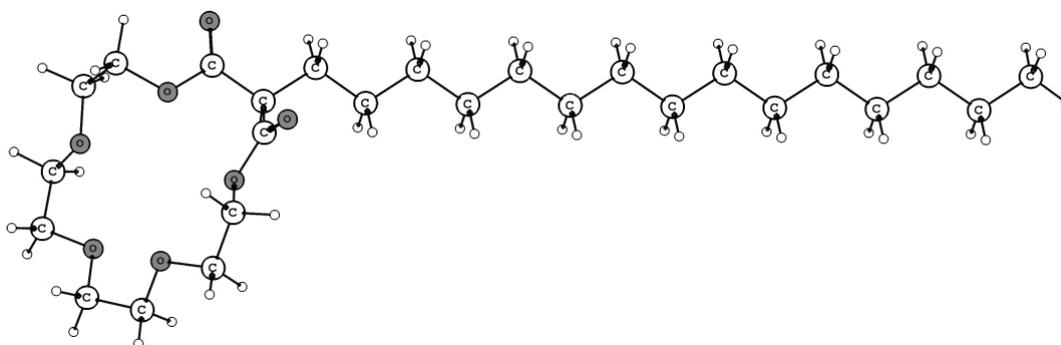


Figure S1 Structure of 3-pentadecyl-2,4-dioxo-16-crown-5 (15-pentadecyl-1,4,7,10,13-pentaoxacyclohexadecane-14,16-dione) **1**.

Table S1 Chemical analysis data for compound **1**.*

$\text{C}_{26}\text{H}_{48}\text{O}_7$	C	H	O
Calc.(%)	66.07	10.24	23.70
Found (%)	66.52	10.01	

*Analysis was performed using Elementar Vario Micro cube instrument.

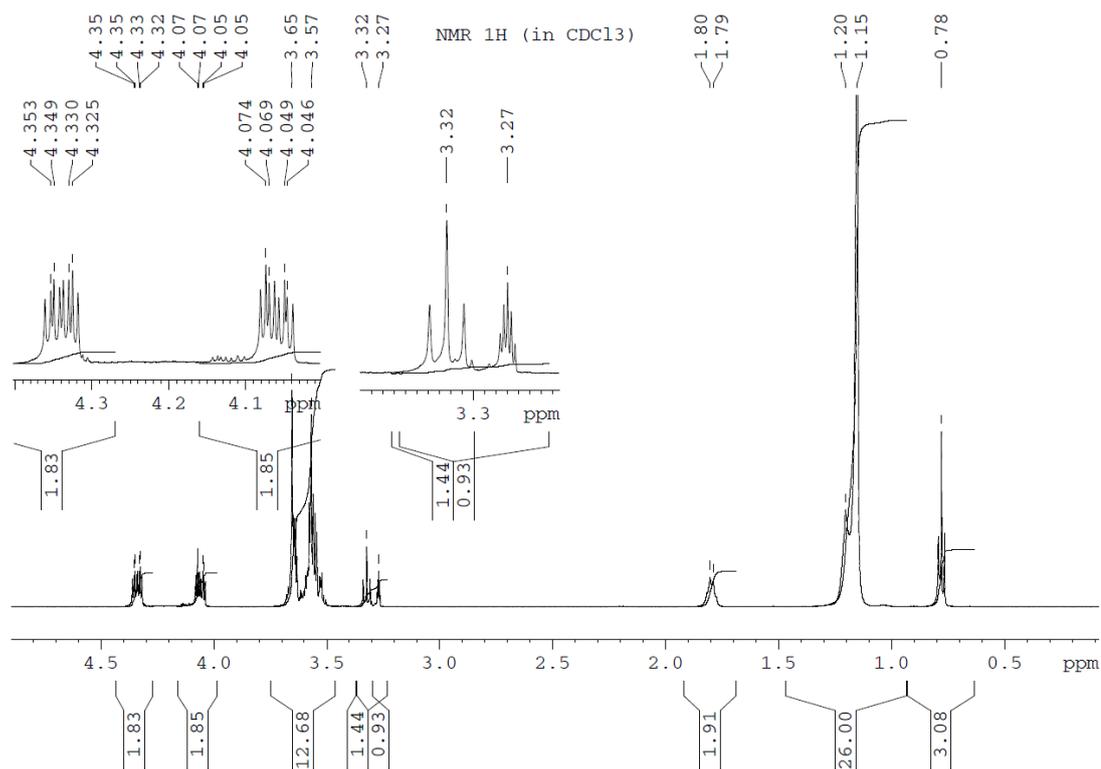


Figure S2 ¹H NMR spectrum of compound **1** (CDCl₃) δ: 0.95 (t, 3H, CH₃); 1.30 (m, 26H, CH₂); 1.83 (m, 2H, CH₂); 3.36 (t, 1H, COCH₂CO); 3.36 (m, 8H, OCH₂); 3.71 (t, 4H, OCH₂); 4.21 (m, 2H, COOCH₂); 4.31 (m, 2H, COOCH₂).

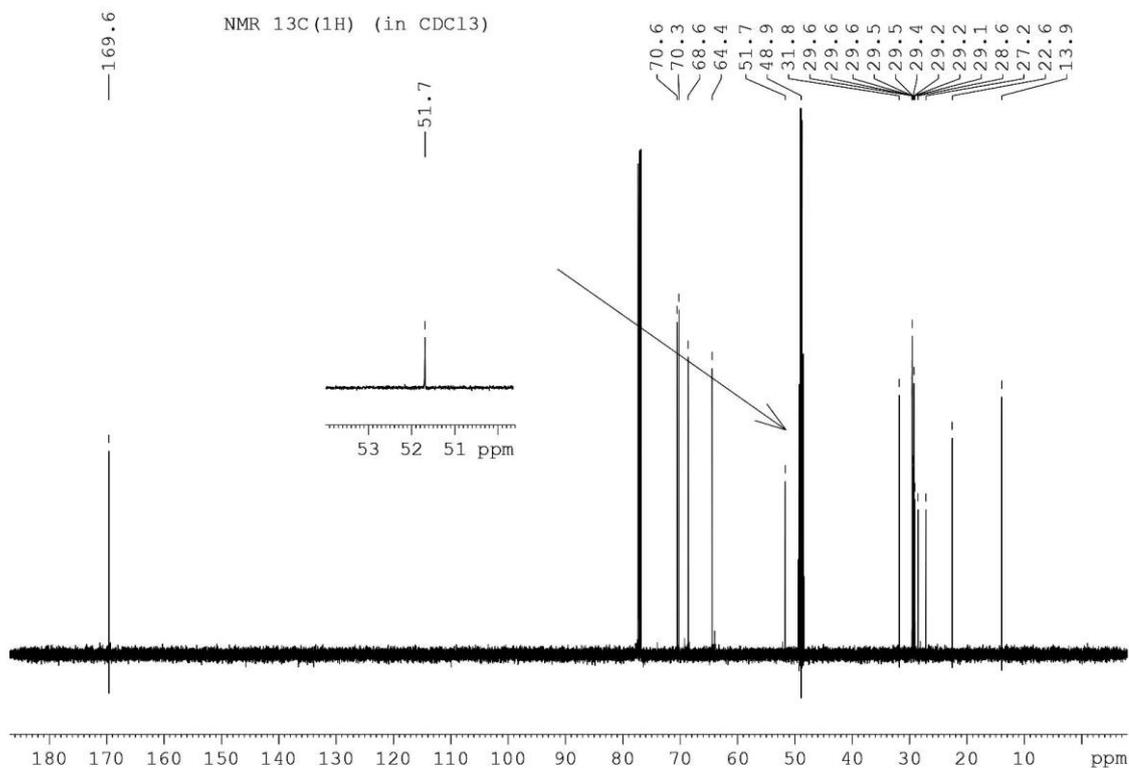


Figure S3 ¹³C NMR spectrum of compound **1** (CDCl₃+CD₃OD) δ: 13.90; 22.60; 27.20; 28.60; 29.10; 29.20; 29.40; 29.50; 29.60; 31.80; 51.70; 64.40; 68.60; 70.30; 70.60; 169.50.

Table S2 Parameters of the equivalent circuit calculated for the hodographs of Li // Li cells.

Electrolyte	Storage time/ months	R1/Ohm	R2/Ohm	C1, 10 ⁻⁷ /F	CPE1-T, 10 ⁻⁵ /F	CPE1-T
without additives	0	2.2	940	2	1.4	0.78
	8	4.7	1260	1	0.8	0.85

Electrolyte	Storage time/ months	R1/ Ohm	R2/ Ohm	C1, 10 ⁻⁷ / F	CPE1-T, 10 ⁻⁵ /F	CPE1- P	C2, /F	CPE2-T, 10 ⁻³ /Ohm ⁻¹	CPE2-P
with compound 1	0	1.2	330	5	1.6	0.72	6×10 ⁻⁶	1.1	0.04
	8	1.6	860	6	2.5	0.65	1×10 ⁻⁵	1.6	0.0003