**Supplementary Figure 1.** Schematic illustration of the lithium-suspension cell or “zero gap” cell.

**Supplementary Figure 2.** (a) The 5\(^{th}\) galvanostatic discharge/charge profile of Li-suspension cells using S/C catholytes of 5S-12KB-MM, 5S-12KB, 5S-26KB, and 20S-26KB at C/9. (b) The 10\(^{th}\) galvanostatic discharge/charge profile of Li-suspension cells using S/C catholytes of 5S-12KB-MM, 5S-12KB, 5S-26KB, and 20S-26KB at C/9.
Supplementary Figure 3. Photographs of catholytes with 20 vol% sulphur and 26 vol% KB obtained by (a) – (b) mechanical mixing; (c) – (e) sulphur-impregnation.

Supplementary Figure 4. Thermal gravity analysis of as prepared S/C composite. The temperature was controlled from room temperature to 550 centigrade at 10 °C/min.