Supporting information:

Solid polymer electrolytes with flexible framework of SiO$_2$ nano-fibers for highly safe solid lithium batteries

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**Fig. S1.** SEM images of (a) the well-organized framework of 3D SiO$_2$ NFs, (b) the SiO$_2$ particles. (c) Top view image of PLS with a smooth surface.

The top-view SEMs of 3D SiO$_2$ NFs, SiO$_2$ particles and PLS are shown in Fig. S1. The frameworks of 3D SiO$_2$ NFs consist of nano-fibers in diameter of approximately 200 nm. In contrast, SiO$_2$ particles in diameter of approximately 250 nm are prepared, of which SEM images are shown in Fig. S1b.
After being heated with alcohol burner, the melted PEO is absent while the structure of 3D SiO₂ NFs maintains. This feature is beneficial to avoiding short circuit at elevated temperatures.