

# 公司介绍

## Company profile

赣锋锂电  
GanfengLiEnergy

### 锋锂新能源

江西赣锋锂业股份有限公司旗下全资子公司（股票代码：A股002460，H股01772）

浙江锋锂新能源科技有限公司成立于2017年，注册资金2.5亿人民币。锋锂主要从事高安全、高能量密度的固态锂电池及固体电解质材料的研发、设计、生产与销售。电解质材料是固态电池的核心技术，浙江锋锂量产的氧化物与硫化物电解质材料均达到业内最高水平。公司研发基础扎实、产品先进性突出，是国际先进、国内领先的固态电池及固体电解质材料的研发生产企业。

### FunLithium New Energy

A wholly owned subsidiary of Jiangxi Ganfeng Lithium Industry Co., Ltd. (stock code: A shares 002460, H shares 01772)  
Zhejiang FunLithium New Energy Technology Co., Ltd. was founded in 2017 with a register capital of 250 million Yuan. FunLithium is focused on R&D, design, manufacturing and marketing of solid electrolyte materials and solid-state batteries with high safety performance and high energy density. Our oxide and sulfide solid electrolyte materials have reached the highest level in the industry. With our solid R&D background and rich experience, FunLithium aspires to a leading standing in solid-state technology.

## 核心优势

### Core advantages

#### 人才积累 People

创始人拥有17年固态电池研发经历、研发团队拥有9年固态电池从业经历，拥有健全的研发机制及技术经验。

FunLithium founder has 17 years of experience in solid-state battery, and our R&D team has over 9 years of experience, and has created a well-established research and development mechanism.

#### 行业认可 Recognition

参与《固态电池固液含量测定试验方法》、《电动汽车用锂离子固态动力电池性能试验方法及技术要求》等行业标准制定。

FunLithium participated in the development of industry standards and regulations such as "Test method for solid-liquid content determination of solid-state batteries" and "Test method and requirement for solid-state batteries for electric vehicles".

#### 技术沉淀 Technology

公司及其关联企业布局固态电池专利百余项，其中已授权发明专利25项，在国内固态电池领域处领先地位。

FunLithium has filed for more than 100 patents for solid-state technology, 25 of which have been approved. FunLithium aspires to a leading standing in solid-state technology worldwide.

#### 完整生态 Industry Chain

母公司赣锋锂业拥有完整的锂产业链，贯穿资源开采、金属及化合物加工到电池制造，可助力企业获得适宜原材料，并将前沿技术快速落地。

The parent company, Ganfeng Lithium, has a closed-loop lithium industry chain from lithium resources, to lithium chemicals, to lithium batteries and to battery recycling, securing material supplies for solid-state battery research and manufacturing.

浙江锋锂新能源科技有限公司

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## SOLID-STATE BATTERY

### 固态电池

为世界创造高性能、高安全的  
新一代电池

A new generation of batteries with  
higher safety and better performance



浙江锋锂新能源科技有限公司  
Zhejiang FunLithium New Energy Technology Co., Ltd.

# 主要产品

## Product portfolio

### 固体电解质粉体 Solid Electrolyte Powders

浙江锋锂已经实现了自主知识产权的氧化物电解质材料百吨级、高电导硫化物电解质公斤级制备能力，性能达到国际领先水平。

Mass production of oxide electrolyte (100 tons level) and high-conductivity sulfide electrolyte (kg level.)



#### 硫化物电解质粉体 Sulfide electrolyte powders

名称 Type	化学式 Chemical formula	离子电导率,RT Ionic Conductivity, RT	粒度 Particle Size
LGPS	$\text{Li}_{10}\text{GeP}_2\text{S}_{12}$	$8 \pm 1 \text{ mS} \cdot \text{cm}^{-1}$	0.5~5 $\mu\text{m}$
LPSC	$\text{Li}_6\text{PS}_5\text{Cl}$	$10.5 \pm 1 \text{ mS} \cdot \text{cm}^{-1}$	2~20 $\mu\text{m}$

#### 氧化物电解质粉体 Oxide electrolyte powders

名称 Type	化学式 Chemical formula	离子电导率,RT Ionic Conductivity, RT	粒度 Particle Size
LATP	$\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}\text{P}_3\text{O}_{12}$	$0.7 \pm 0.1 \text{ mS} \cdot \text{cm}^{-1}$	D50=0.3 $\mu\text{m}$ D50=0.5 $\mu\text{m}$ D50=15 $\mu\text{m}$
LLZ XO	$\text{Li}_{6.4}\text{La}_3\text{Zr}_{1.4}\text{X}_{0.6}\text{O}_{12}$ (X=Ta, Nb)	$0.85 \pm 0.1 \text{ mS} \cdot \text{cm}^{-1}$	D50=0.3 $\mu\text{m}$ D50=0.5 $\mu\text{m}$ D50=10 $\mu\text{m}$

### 致密固体电解质片 Compact solid electrolyte sheet

基于电解质粉体材料开发出多种类型致密超薄固体电解质片，产品批次稳定性高，可用于固态电池开发、特殊电化学器件、传感器等。

Electrolyte sheets are customized into different format, manufactured with consistent quality and employed in multiple fields including solid state battery manufacturing.



#### 可定制规格 Available format

- 可定制形状：圆形、方形
- Available shape: round, square

- 可定制尺寸：12~100mm
- Available dimension: 12~100mm

- 可定制厚度：200~500 $\mu\text{m}$
- Available thickness: 200~500 $\mu\text{m}$

#### 化学性质 Chemical characteristics

- 安全稳定，耐水耐火
- Stable, safe, water/fire resistant
- 热学线性膨胀系数：4.89x10<sup>-5</sup>K<sup>-1</sup>
- Coefficients of linear thermal expansion: 4.89x10<sup>-5</sup>K<sup>-1</sup>

#### 机械强度 Mechanical strength

- 三点弯曲强度：100~160N·mm<sup>-2</sup>
- 3-point bending flexural: 100~160N·mm<sup>-2</sup>

- 密度：3.29g·cm<sup>-3</sup>
- Density: 3.29g·cm<sup>-3</sup>

- 维氏硬度：556HV
- Vickers hardness: 556HV

#### 离子电导率 Ionic conductivity

- 室温离子电导率：4.0x10<sup>-4</sup>S·cm<sup>-1</sup>
- Ionic conductivity @RT: 4.0x10<sup>-4</sup>S·cm<sup>-1</sup>
- 离子迁移数接近于1
- Ion mobility close to 1

## 一代电芯

### Gen.1 Cell: NCM-Solid electrolyte-Graphite

#### 半固态锂离子电池

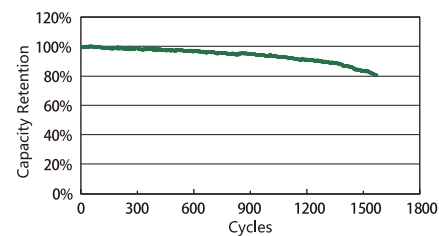
Semi-solid-state Lithium Ion Cell



#### · 产品参数 Specifications

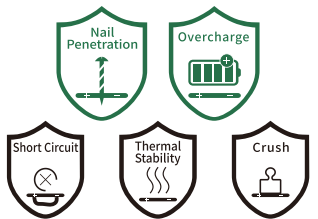
应用领域 Application	VDA 标准模组 / 定制开发 VDA standard module/OEM design
标称容量 Nominal Capacity	10~70Ah
标称电压 Nominal Voltage	3.65V
能量密度 Energy Density	240±5Wh/kg
循环寿命 Cycle Life	>1500@0.33C/0.33C

#### · 循环寿命 Cycle Life

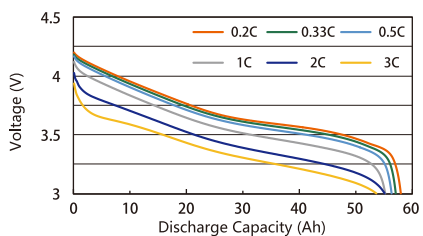


#### · 安全性能 Safety performance

- 权威第三方检测， 电池不起火、不爆炸。
- Passed all safety tests @ 3rd party laboratory. No fire or explosion.



#### · 倍率性能 Discharge Rate



## 二代电芯

### Gen.2 Cell: NCM-Solid electrolyte-Lithium metal

#### 固态锂金属电池

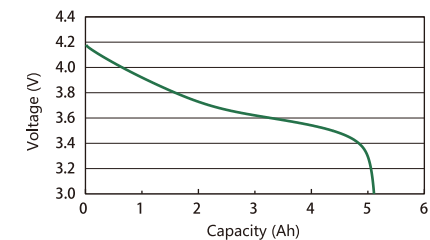
All-solid-state Lithium Metal Cell



#### · 产品参数 Specifications

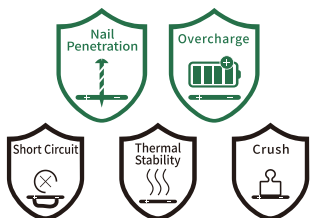
应用领域 Application	消费电子 / 特殊领域 Consumer electronics/special area
标称容量 Nominal Capacity	5~20Ah
标称电压 Nominal Voltage	3.75V
能量密度 Energy Density	350±5Wh/kg
循环寿命 Cycle Life	>300@0.1C/0.5C

#### · 充放电曲线 Capacity vs. voltage curve



#### · 安全性能 Safety performance

- 权威第三方检测， 电池不起火、不爆炸。
- Passed all safety tests @ 3rd party laboratory. No fire or explosion.



#### · 循环寿命 Cycle Life

