西昌学院相关情况汇报

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2026/07/02

目录 CONTENT

西昌学院介绍

“川西明珠，航天之城。

襟山带湖，星日同辉”

（卫星、阳光、月亮）

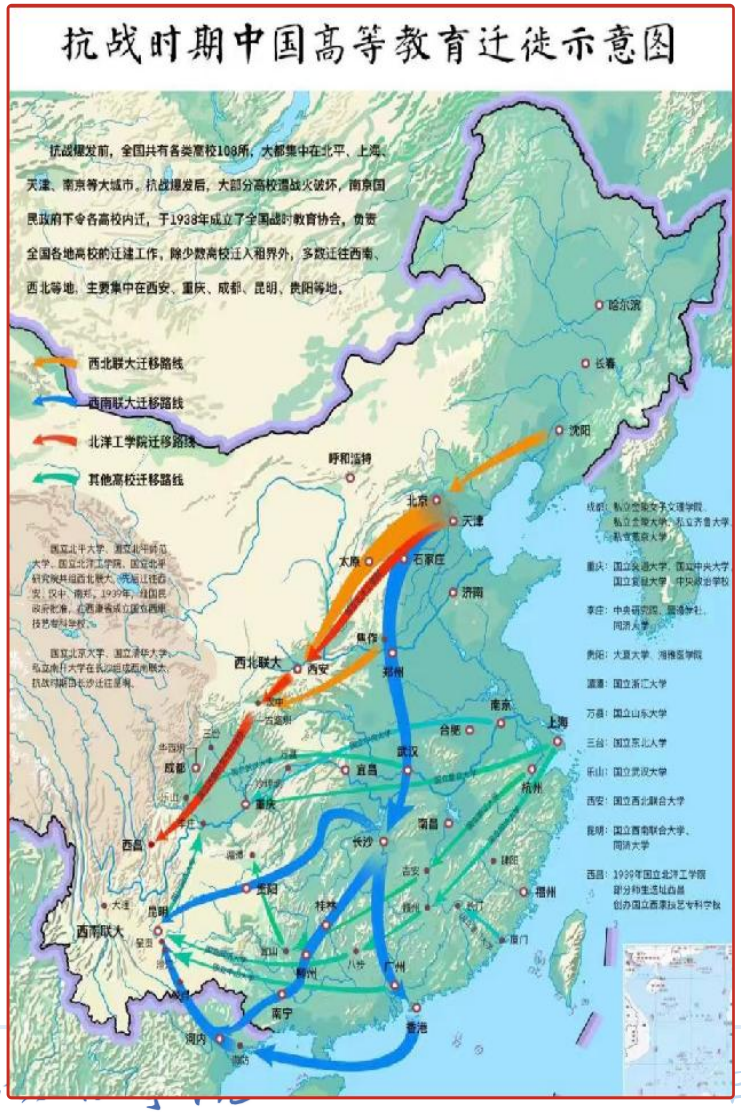
是国内少有的“战略矿产 + 零碳能源”
双富集工业基地

资源禀赋:

- 位于川滇巨型成矿带，探明矿种 103 种、具备规模储量 60 种，特大型 / 大型矿床 30 处；含 29 种国家战略性矿产，13 种矿产保有储量四川省第一，矿石普遍品位高、埋藏浅、共伴生多、综合利用价值极高
- 全州清洁能源技术可开发总量 2.25 亿千瓦，水电调节能力全国顶尖，形成水风光互补一体化，解决高载能工业低碳、低成本用电痛点

西昌学院的办学之路始终与民族地区发展同呼吸、共命运

肇始于 1939 年创建的国立西康技艺专科学校，开启了攀西民族地区高等教育的序幕。



北洋工学院

西安临时大学

国立西北联合大学


国立西康技艺专科学校

国立西康技艺专科学校遗址

艰苦奋斗
兴学强国

办学初心始终如磐、文化传承使命在肩

1895 北洋工学院

1939 国立西康技艺专科学校

1953 西昌农业学校

1958 西昌专科学校

1978 西昌农业专科学校

1978 西昌师范专科学校

1978 凉山教育学院

1984 凉山大学 民盟主办的民办高校

1993 西昌农业高等专科学校

1993 西昌师范高等专科学校

2003 西昌学院

2010 通过教育部本科合格评估

2015 四川省首批整体转型发展试点院校

2017 获批国家教育现代化推进工程100所应用型本科高校建设单位 四川省硕士学位授权立项建设单位

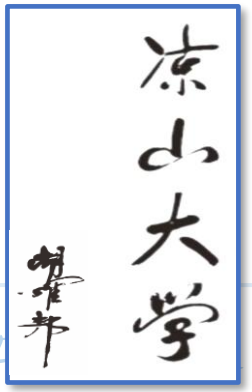
2018 通过教育部审核式评估

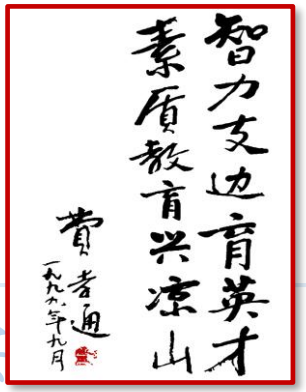
2020 四川省、教育部、国家民委共建高校 四川省硕士学位授权立项建设“重点培育”单位

2021 四川省“三全育人”综合改革试点高校 教育部“高校银龄教师支援西部计划”受援单位 目前四川省受援单位中唯一一所公办院校

2022 教育部“对口支援西部地区高等学校计划”受援高校 中国农业大学对口支援

2024 获批硕士学位授予单位 农业、公共管理、资源与环境





两度毅然迁址、服务大局

材料与能源学院介绍

稀土、钒钛新材料研究平台

邛海实验室

州校共建攀西战略资源创新开发重点实验室

省中试平台

实验设备

JT-150注塑机

TSJ-35B挤出机

HT-25T平板硫化机

IEST302E流变仪

XSK-160双辊塑炼机

盐雾试验机

JH-XBL-A冲击试验机

紫外光耐候试验机

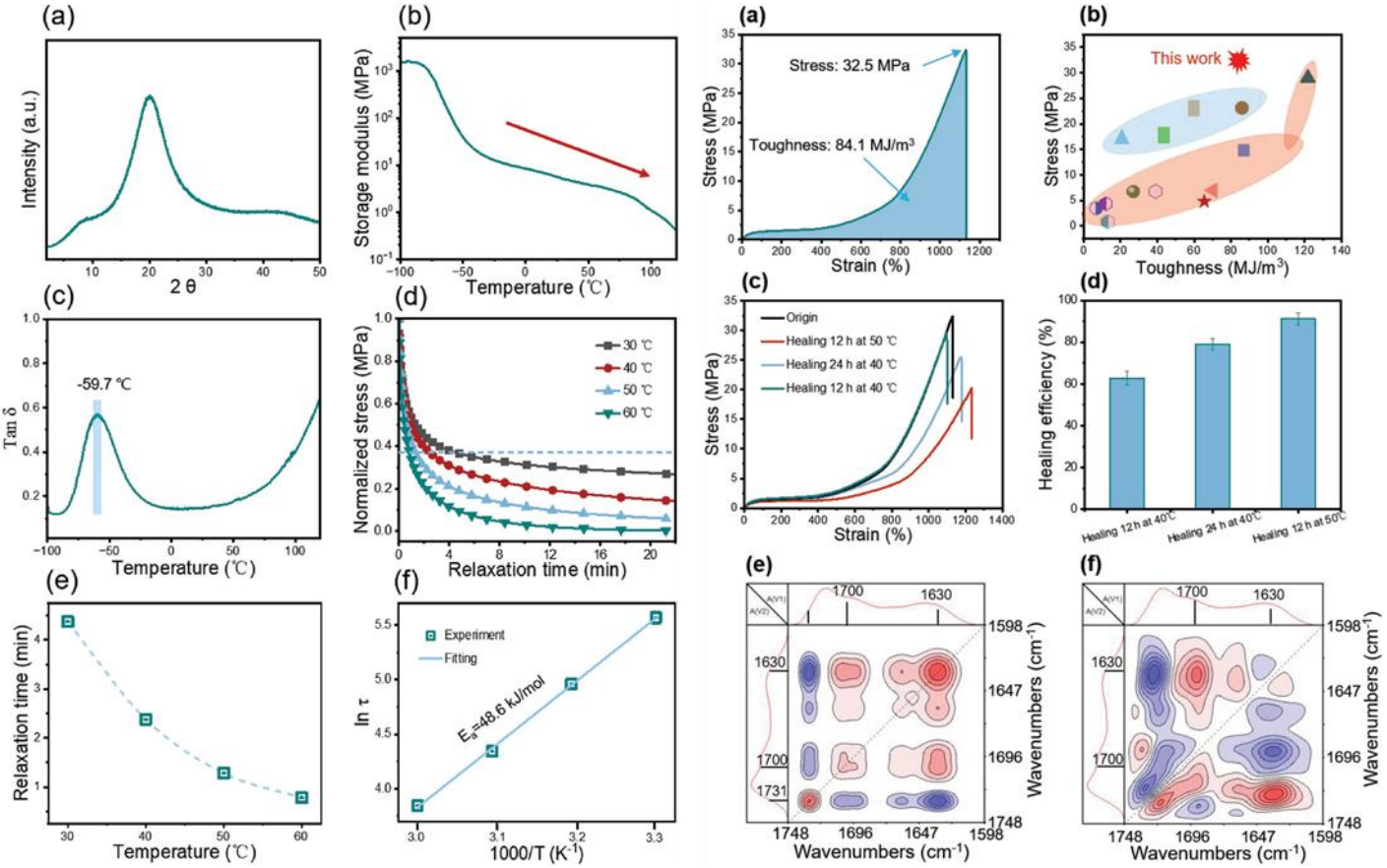
实验设备

实验室磁重浮选矿设备

矿物选治中试线

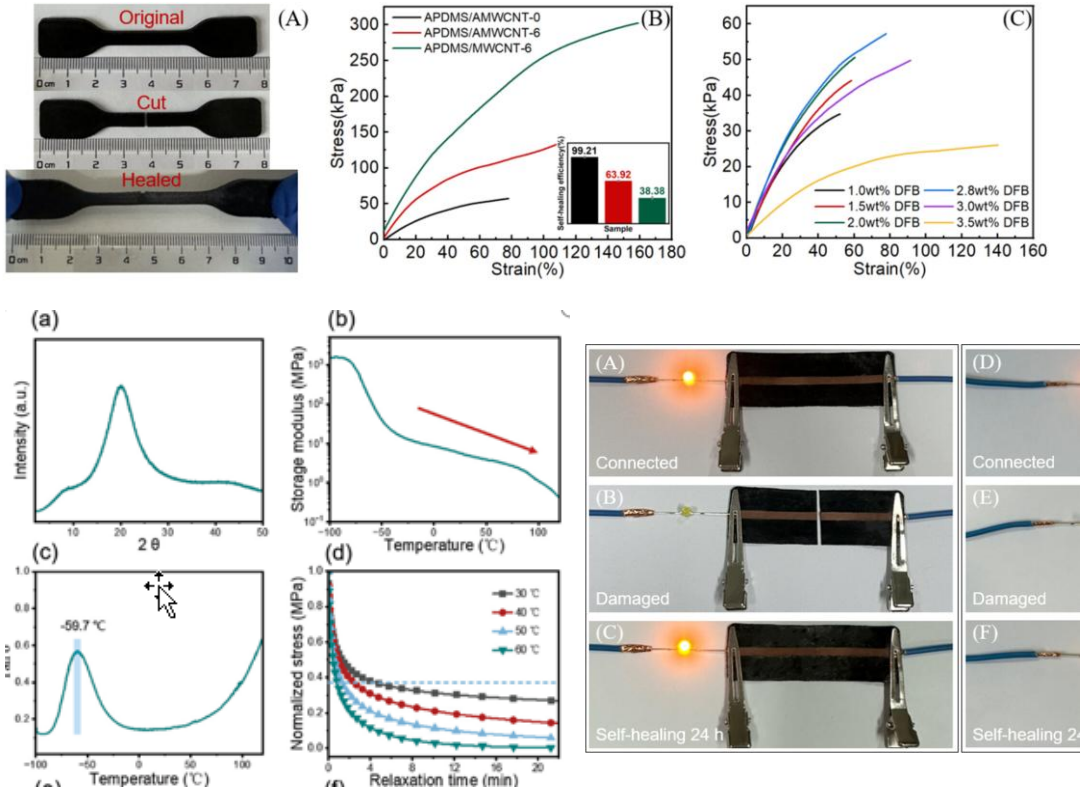
聚合物自修复研究

分层氢键结构提升机械强度与自修复效率



分层氢键作为动态交联点，能够有效耗散大量能量。拉伸时，分层氢键逐步断裂，从而实现PU弹性体的增强与增韧

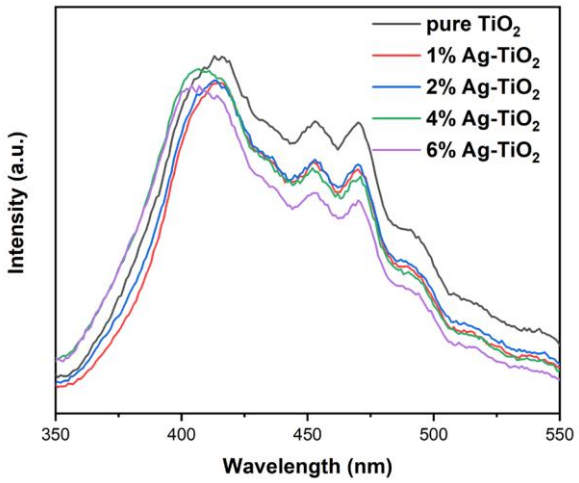
亚胺辅助自修复APDMS/AMWCNT弹性体

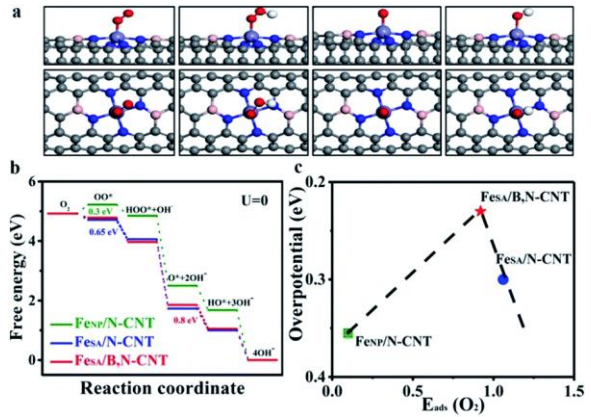


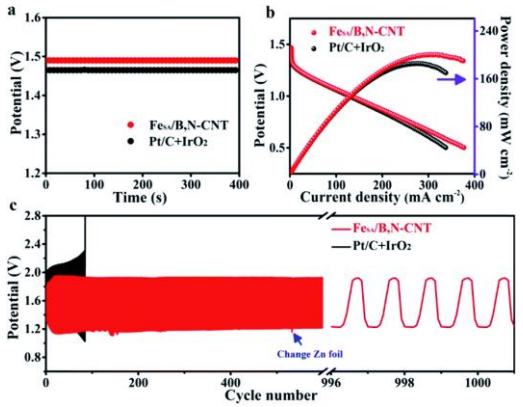
印刷电路应用时可自修复实现电路导通

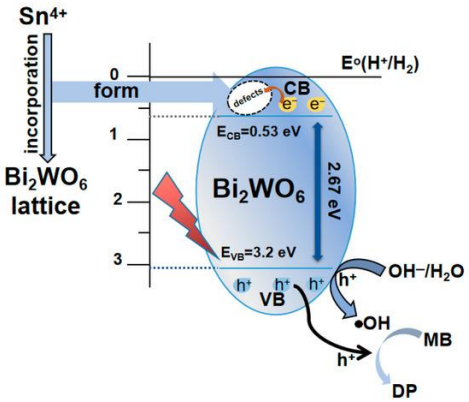
Jin B, etc. Macromolecular Chemistry and Physics, 2023, 224(22): 2300264

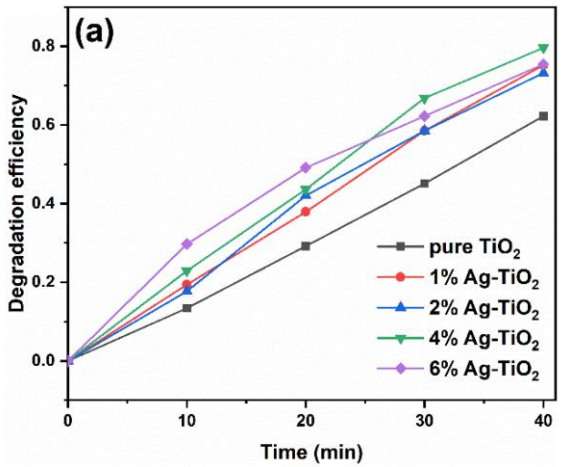
光催化研究

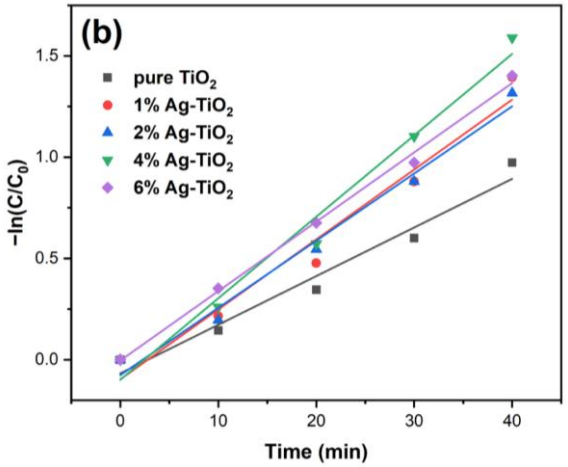


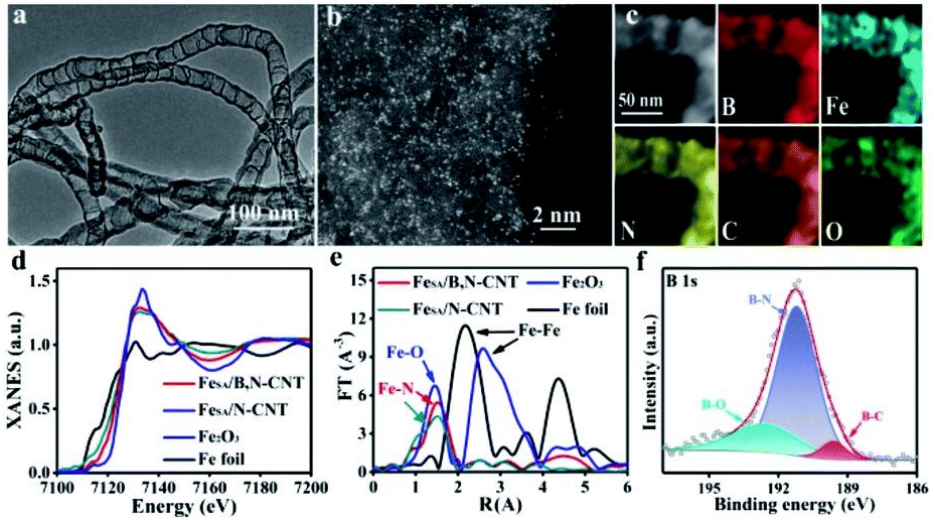








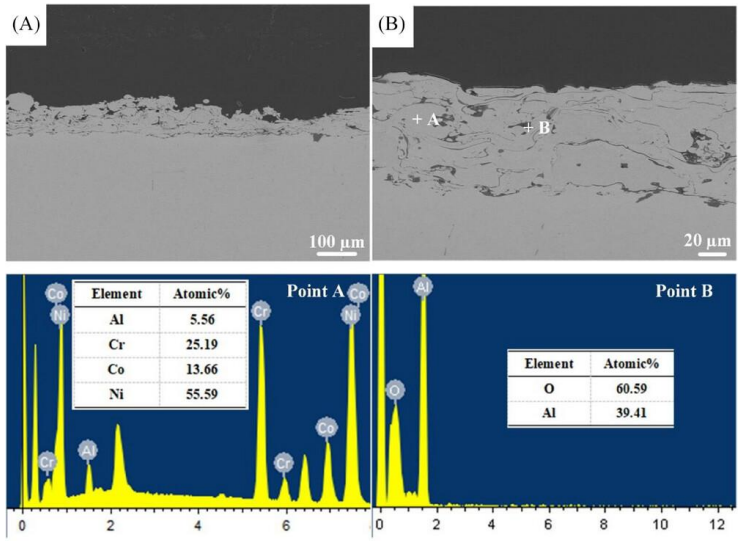


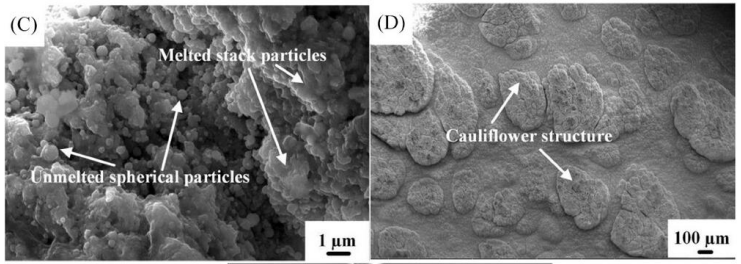


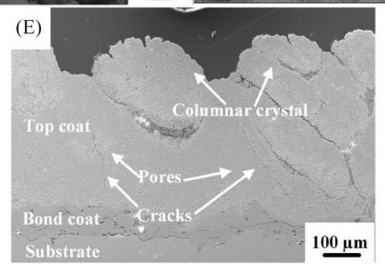
通过掺杂等方式提高材料光催化活性，运用于矿物选冶污水处理

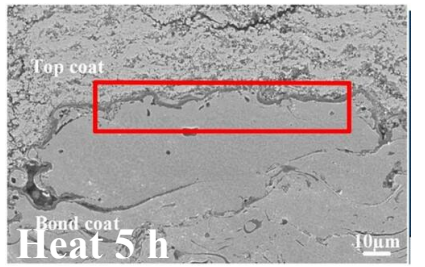
Yu Jiao, et al. Nanomaterials, 2022, 12(9): 1599.

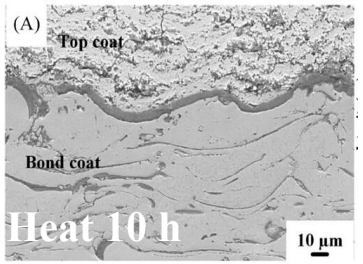
热障涂层

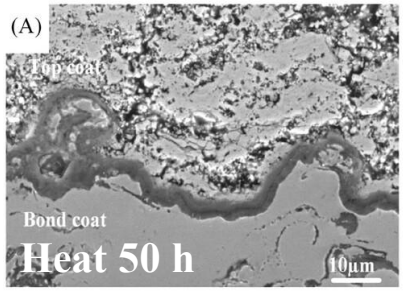


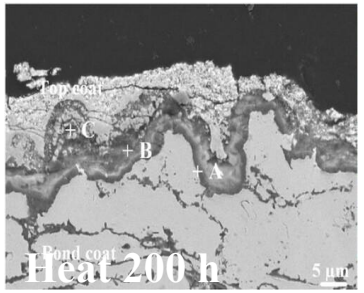






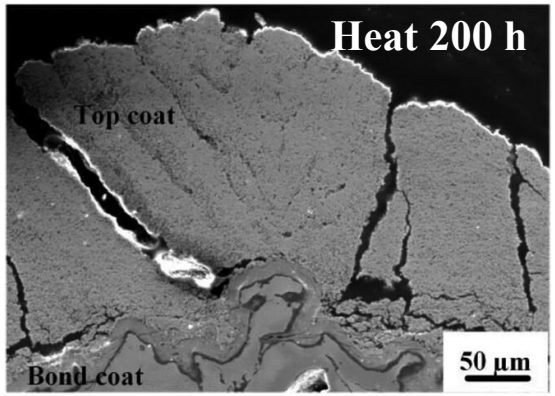


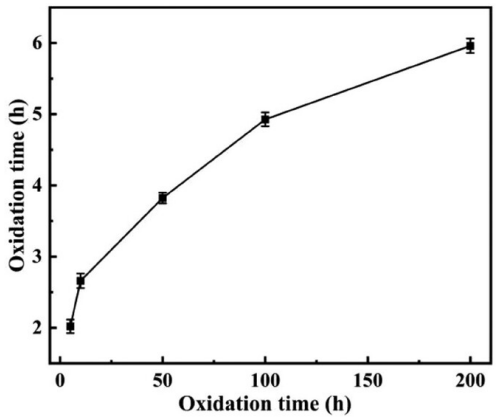


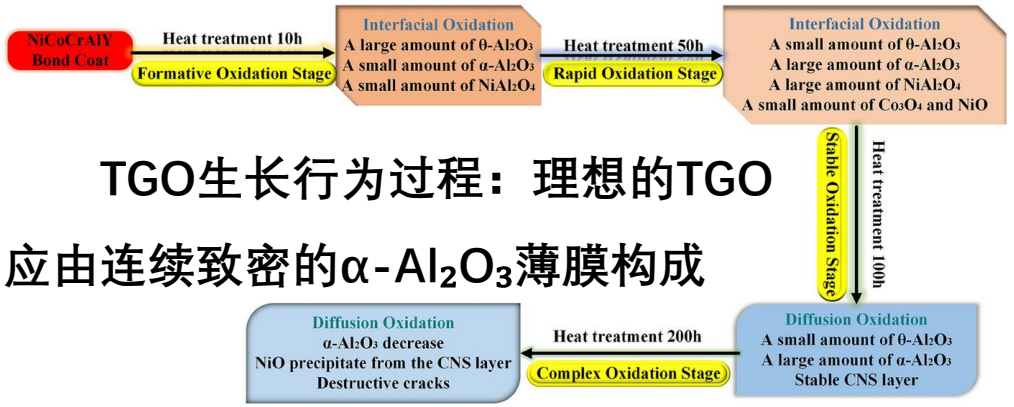


高温软化合金粉末并撞击基底形成层状涂层

尖晶石结构扩大,CNS组织迅速生长，形成TGO层中的薄弱点，进而影响涂层的热循环寿命







TGO生长行为过程：理想的TGO

应由连续致密的α-Al_2O_3薄膜构成

TC出现较宽的裂纹，工作寿命殆尽　TGO的厚度随氧化时间延长而增加

Feng X, et al. International Journal of Applied Ceramic Technology, 2024, 21(6): 4100-4113.

锂电池研究

项目批准号	52102307
申请代码	E0208
归口管理部门	
依托单位代码	61501308A1689-1930

52102307100215 7

国家自然科学基金

资助项目计划书

（包干制项目）

资助类别：青年科学基金项目

亚类说明：

附注说明：

项目名称：高能量密度高安全性锂金属电池的制备及性能调控

资助经费：30万元　　执行年限：2022. 01-2024. 12

负 责 人：焦钰

通讯地址：四川省凉山州西昌市西昌学院

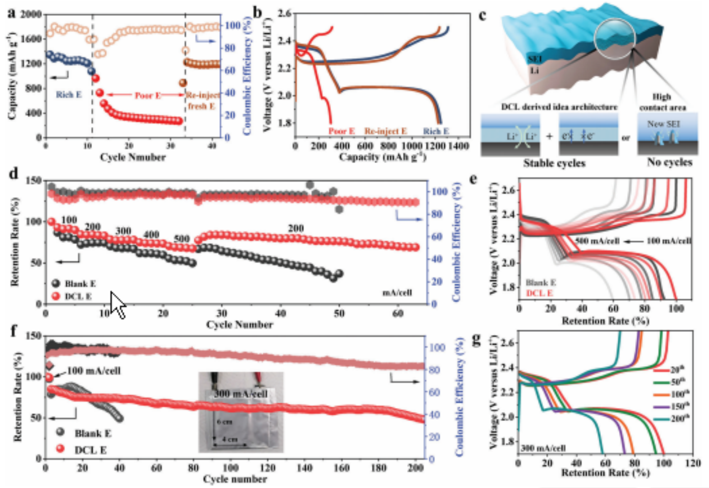


Figure 4. Electrochemical performances of high-energy Li–S pouch cells. a) Typical cycle performance of Li–S pouch … not exceeding 10 cycles while the cycle stability is improved again once the fresh electrolyte is injected. The electrolyt… ing discharge/charge voltage plateau in panel (a). c) Schematic illustration of the formed SEI derived by DCL or blank electrolyte. d) Rate performance and e) corresponding voltage plateau of DCL electrolyte at various current density. f) Cycle performance at a current density of 300 mA per cell and g) corresponding voltage plateau of DCL electrolyte.

demonstrate that the effectiveness of our strategy using DCL electrolyte (Tables S1 and S2, Supporting Information). The strategies reported in literature are divided into cathode modification and configuration optimization. The cathode modification concerns more about inhibiting the shuttle effect of LiPS, while the configuration optimization concerns more about achieving a stronger SEI structure to passivate the lithium anode. As shown in Table S1 (Supporting Information), the reported Li–S pouch cell can hardly achieve ≈20 cycles only by suppressing the shuttle effect of LiPS. By contrast, inhibiting the growth of Li dendrites achieves obvious promotion but so far still not able to maintains >100 cycles (Table S2, Supporting Information). These results further verify the advantage of DCL electrolyte for the commercial use in Li–S pouch cells.

At last, the safety of assembled Li–S pouch cells is demonstrated via nailing (Figure 4j and Figure S21, Supporting Information) and shorting (Figure S22, Supporting Information). We found that the safety was comprehensively superior than that of the lithium-ion batteries. No leakage or explosion occurred whether using DCL electrolyte or blank electrolyte, and the local heat of the nail was slightly lower using DCL electrolyte. For the short-circuit tests, the maximum temperature of both electrolytes only rises to ≈50 °C, which is critical for the operation of Li–S cells in extreme environments, again illustrating the great potential of DCL electrolyte to promote the commercialization of Li–S cells.

3. Conclusions

Expanding the lithium-sulfur cells from the laboratory coin-scale to pouch-format is a necessary step for the commercialization. In this work, we demonstrate that promoting the stability of lithium metal anode is most urgent rather than inhibiting the polysulfide shuttle effect for improving the performances of Li–S pouch cell. Specifically, KHFDF salt is used to regulate the preferred components of SEI, in which KHFDF salt decomposes prior to solvent. The inner layer of SEI is successfully modulated to KF and LiF enriched structure, which can effectively alleviate the decomposition of the electrolyte and improve the cycling stability of Li–S pouch cells. This strategy enables the realization of unprecedented long-term cycles (>200 cycles) and high rate (500 mA per cell) characteristics at the format of Li–S pouch cell with sulfur

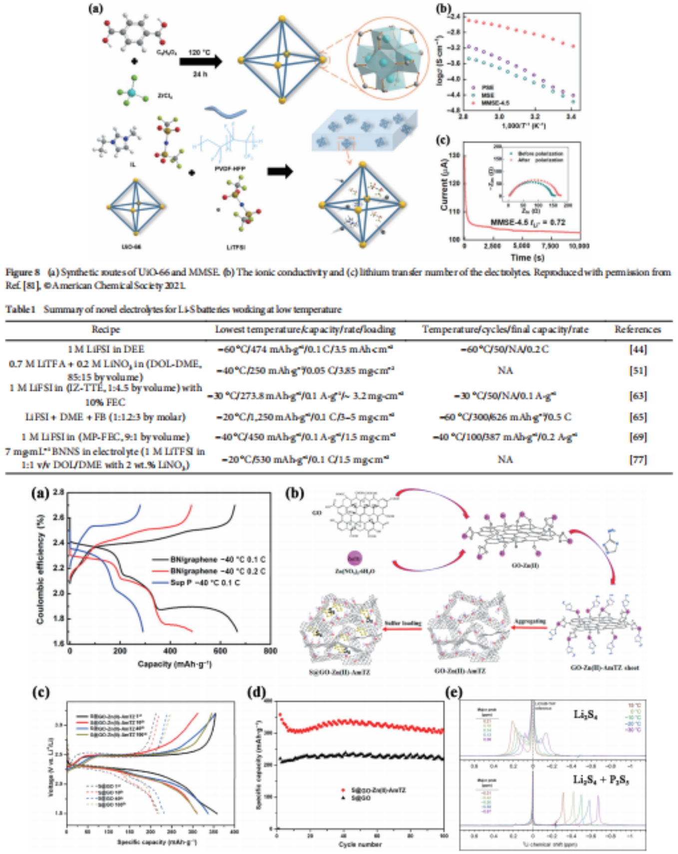


Figure 8 (a) Synthetic routes of UiO-66 and MMSE. (b) The ionic conductivity and (c) lithium transfer number of the electrolytes. Reproduced with permission from Ref. [81], © American Chemical Society 2021.

Table 1 Summary of novel electrolytes for Li-S batteries working at low temperature

Recipe	Lowest temperature/capacity/rate/loading	Temperature/cycles/final capacity/rate	References
1 M LiFSI in DEE	−60 °C/474 mAh·g^{-1}/0.1 C/3.5 mAh·cm^{-2}	−60 °C/50/NA/0.2 C	[44]
0.7 M LiTFA + 0.2 M $LiNO_3$ in (DOL-DME, 85:15 by volume)	−40 °C/250 mAh·g^{-1}/0.05 C/3.85 mg·cm^{-2}	NA	[51]
1 M LiFSI in (IZ-TTE, 1:4.5 by volume) with 10% FEC	−30 °C/273.8 mAh·g^{-1}/0.1 A·g^{-1}/~ 3.2 mg·cm^{-2}	−30 °C/50/NA/0.1 A·g^{-1}	[63]
LiFSI + DME + FB (1:1.2:3 by molar)	−20 °C/1,250 mAh·g^{-1}/0.1 C/3–5 mg·cm^{-2}	−60 °C/300/626 mAh·g^{-1}/0.5 C	[65]
1 M LiFSI in (MP-FEC, 9:1 by volume)	−40 °C/450 mAh·g^{-1}/0.1 A·g^{-1}/1.5 mg·cm^{-2}	−40 °C/100/387 mAh·g^{-1}/0.2 A·g^{-1}	[69]
7 mg·mL^{-1} BNNS in electrolyte (1 M LiTFSI in 1:1 v/v DOL/DME with 2 wt.% $LiNO_3$)	−20 °C/530 mAh·g^{-1}/0.1 C/1.5 mg·cm^{-2}	NA	[77]

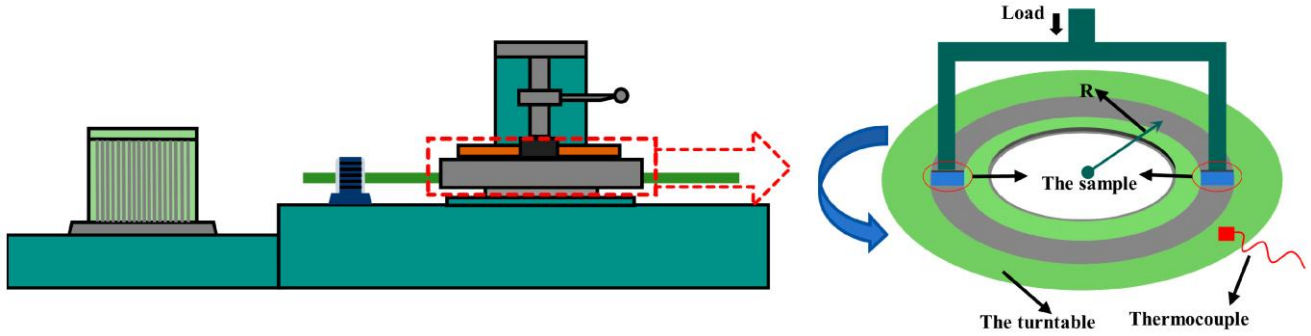
Figure 9 (a) First charge and discharge voltage profiles of BN/graphene and Super P at −40 °C. Reproduced with per… …ical Society 2018. (b) Illustraion of the preparation of GO-Zn(II)-AmTZ and the S@GO-Zn(II)-AmTZ composite. (c) The … …files for S@GO and S@GO-Zn(II)-AmTZ cathodes from different cycles at −20 °C. (d) The cycling performances at −20 °C. Reproduced with permission from Ref. [87], © Elsevier Ltd. 2018. (e) The Variable-temperature ^{7}Li NMR of 0.1 M Li_2S_4 and 0.033 M P_2S_5 + 0.1 M Li_2S_4. Reproduced with permission from Ref. [94], © American Chemical Society 2021.

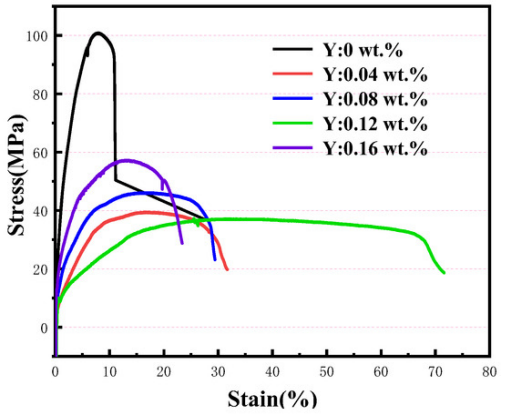
Metal-organic framework (MOF) has been widely used in the electrochemical related field [89–91], especially in Li-S battery due to its porous structure and abundant polar sites [92, 93]. Burns et al. incorporated lithium thiophosphate in Zr-based MOF, which served as LiPSs anchoring sites to disrupt the clustering of LiPSs and prevent the film-like Li_2S deposition at low temperature [94].

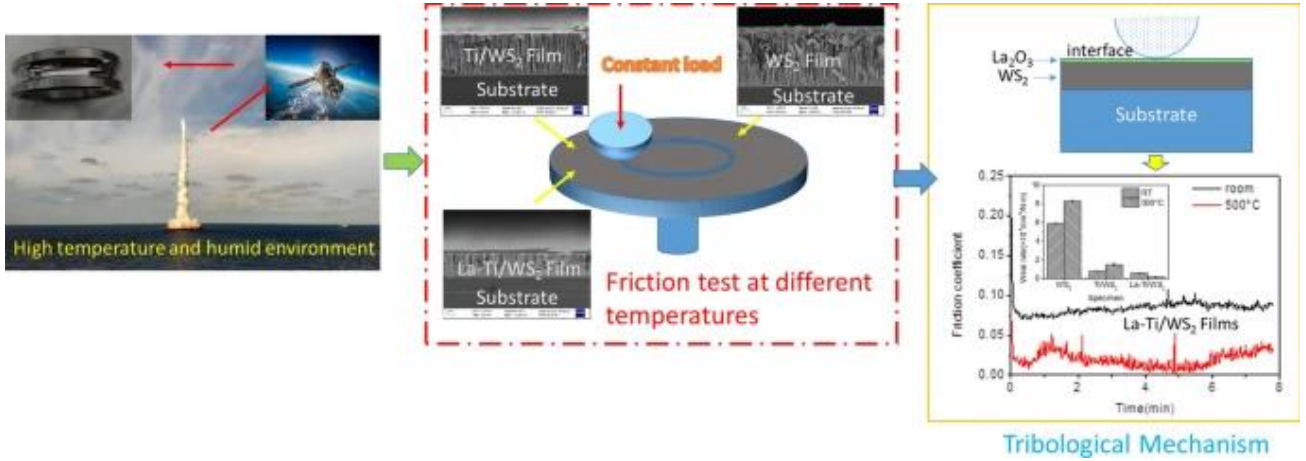
在自科基金资助下，锂电池研究上有所进展

Feng X, et al. International Journal of Applied Ceramic Technology, 2024, 21(6): 4100-4113.

可能有的研究合作点



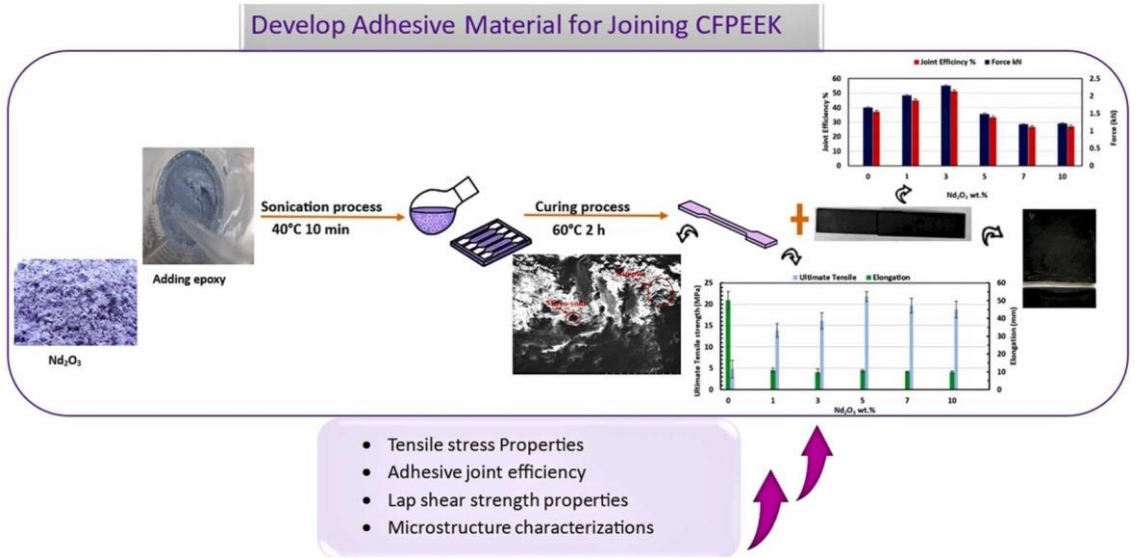


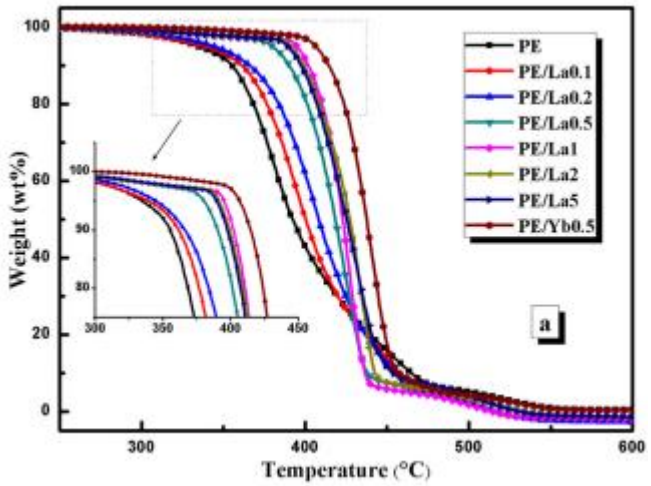


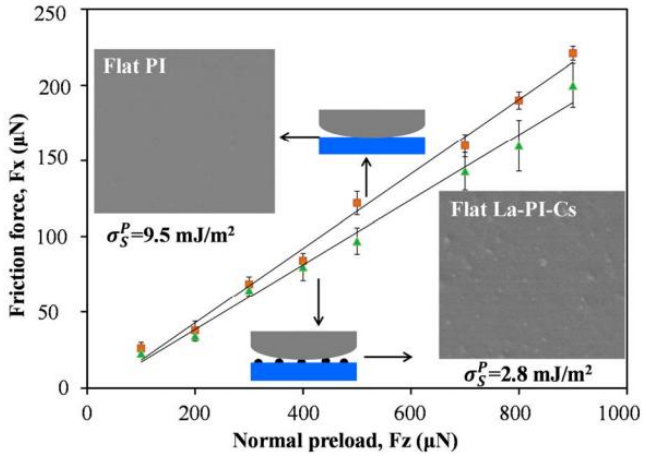
是否可以共同选别可用于中微子实验的PMMA、液闪材料？

是否可以针对实验室所需材料对市场产品提纯或改性？

可能有的研究合作点







是否可以共同开发本地战

略资源的更广泛应用场景？

团队成员

焦钰 教授

郑春梅 副教授

陈家胜 副教授

狄玉丽 副教授

张浩 副教授

石清清 副教授

荆焘 博士

代忠军 博士


明德 乐学
求实 至善
Thank you for listening to
西昌学院