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應用物理及材料工程研究院
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❖ Publications (IF≥8, and/or Nature Index; *corresponding author)

1. **Kaitong Sun**, Si Wu*, Guanping Xu, Lingwei Li, Hongyu Chen, Qian Zhao, Muqing Su, Wolfgang Schmidt, Chongde Cao*, and **Hai-Feng Li***. Unraveling the magnetic and electronic complexity of intermetallic ErPd_2Si_2 : anisotropic thermal expansion, phase transitions, and twofold magnetotransport behaviour. *Rare Metals*, (2025) (In press). DOI: 10.1007/s12598-025-03261-7. [2023 IF=9.6]


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RARE METALS

ORIGINAL ARTICLE



Unraveling the magnetic and electronic complexity of intermetallic ErPd_2Si_2 : anisotropic thermal expansion, phase transitions, and twofold magnetotransport behaviour

Kaitong Sun, Si Wu*, Guanping Xu, Lingwei Li, Hongyu Chen, Qian Zhao, Muqing Su, Wolfgang Schmidt, Chongde Cao*, Hai-Feng Li* 

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PROOF

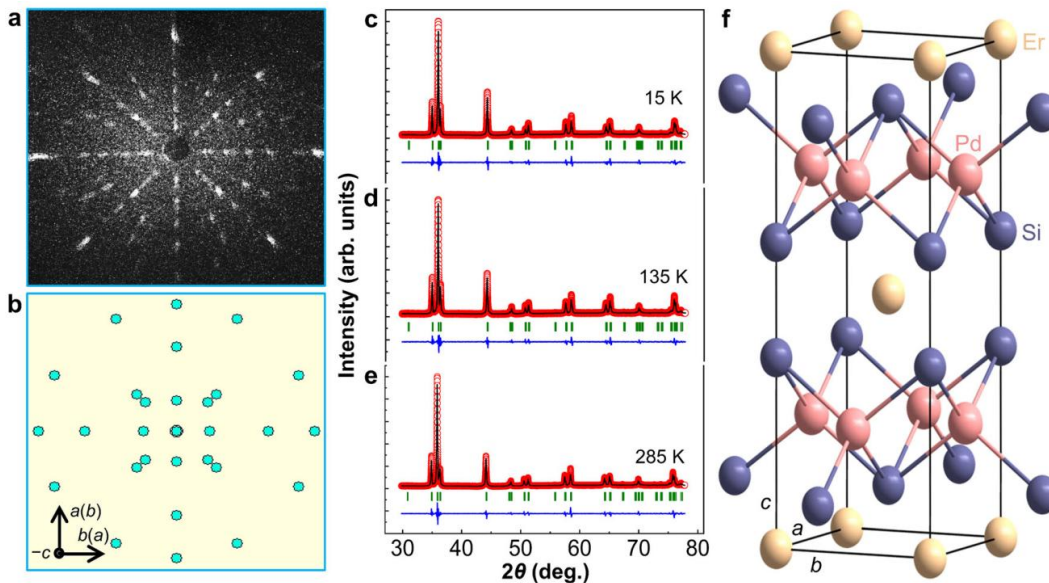
❖ Research Stories

UM research team successfully unraveling the magnetic and electronic complexity of intermetallic ErPd_2Si_2

- This study presents a comprehensive investigation into the physical properties of ErPd_2Si_2 , including structural characterization, heat capacity measurements, magnetization studies, and a detailed analysis of magneto-resistance behaviors.
- The angular dependence of in-plane and out-of-plane magnetoresistances exhibits twofold symmetry, providing transport evidence for the formation of a stripe-type AFM structure of Er moments in the SDW state.
- This study offers detailed experimental evidence of anisotropic thermal expansion, phase transitions, and magnetotransport behavior.
- This work provides new insights into the interplay between localized and itinerant magnetism, which has not been fully understood in earlier studies. The detailed analysis of angular-dependent magnetoresistance and its connection to spin configurations distinguishes this study from prior reports, advancing the understanding of spin-electron interactions in intermetallic compounds.



Ms. Kaitong Sun (孫楷橦) and Prof. Hai-Feng Li (李海峰)



Kaitong Sun, Si Wu*, Guanping Xu, Lingwei Li, Hongyu Chen, Qian Zhao, Muqing Su, Wolfgang Schmidt, Chongde Cao*, and **Hai-Feng Li***. Unraveling the magnetic and electronic complexity of intermetallic ErPd_2Si_2 : anisotropic thermal expansion, phase transitions, and twofold magnetotransport behaviour. *Rare Metals*, (2025) (In press). DOI: 10.1007/s12598-025-03261-7. [2023 IF=9.6]

Prof. Hai-Feng Li is the corresponding author of this study, with Ms. Kaitong Sun, a Ph.D. student at the IAPME, serving as the first author. This work was supported by the Science and Technology Development Fund, Macao SAR (File Nos. 0090/2021/A2 and 0104/2024/AFJ) and University of Macau (MYRG-GRG2024-00158-IAPME).

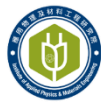


❖ Visits

A delegation from Zhejiang Shouxiangu Pharmaceutical Company, including Mr. Mingyan Li (李明焱) (Chairman of the Board) and management team members Zhenhao Li, Zhenyu Li, Ying Wang, Jing Xu, and Shu Wang, visited the Institute of Applied Physics and Materials Engineering (IAPME) on February 20, 2025. Prof. Handong Sun, Prof. Zikang Tang, Prof. Guichuan Xing, and Prof. Qing Li from IAPME, along with Prof. Huanxing Su from ICMS, participated in the discussion.

Zhejiang Shouxiangu Pharmaceutical Company is an industry pioneer with a fully integrated supply chain encompassing breeding, planting, production, and sales. Recognized as a National High-Tech Enterprise, the company is renowned for its organic cultivation and advanced processing of rare medicinal herbs such as Ganoderma lucidum (Lingzhi), Dendrobium officinale, and Saffron.





During the meeting, Mr. Mingyan Li provided an overview of the company, highlighting the company's history, core values, and strategic focus areas, particularly in traditional Chinese medicine, biotechnology, and health and wellness. He emphasized the company's commitment to advancing innovative healthcare solutions and its interest in collaborating with leading research institutions. Prof. Handong Sun then introduced IAPME, detailing its research capabilities, interdisciplinary approach, and ongoing projects in advanced materials and biomedical applications. He also highlighted IAPME's achievements in scientific research and international collaborations, showcasing the institute's strength in translating scientific discoveries into practical applications. Both parties exchanged valuable insights and discussed potential areas for collaboration, focusing on tumor immunotherapy, health and wellness, and biomedical materials.



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