

CURRICULUM VITAE



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EDUCATION

2020 Ph.D, Metallurgy, Norwegian University of Science and Technology, Trondheim, Norway
2016 MS, Metallurgy, Kunming University of Science and Technology, Kunming, China
2013 BS, Metallurgy, Kunming University of Science and Technology, Kunming, China

PROFESSIONAL EXPERIENCE/ACHIEVEMENTS

8/2025 – now **Wai Environmental Solutions AS**
Product Application Engineer

- Drive Marketing and Sales activities for the promotion of bio-based decarbonization solutions to key stakeholders, such as metallurgical industries and other end user communities.
- Facilitate bio-based carbon product development for new high-end industrial sectors and applications.
- Participate in process design for bio-based carbon product production facilities.

9/2024 – 8/2025 **Norwegian University of Science and Technology**
Project based researcher

- Investigating the reduction kinetics of SiO_2 in $\text{SiO}_2\text{-CaO-Al}_2\text{O}_3$ slags using graphite crucibles at high temperatures.
- Performing experimental analysis to study the impact of $\text{CaO/Al}_2\text{O}_3$ ratios on slag properties and reduction mechanisms.
- Conducting kinetic analysis of SiO_2 reduction to understand reaction mechanisms and their influence on slag behavior.
- Assessing the effects of slag accumulation and viscosity on the tapping process in Si and FeSi alloy production.
- Analyzing interactions between slag and carbon materials at the furnace bottom to enhance process efficiency.
- Transformation of carbon samples to SiC.

5/2022 – 8/2025 **Norwegian University of Science and Technology**
Postdoc researcher

- Currently engaged in the Thermobat project, focusing on developing cost-effective manufacturing techniques for phase change materials aimed at long-duration energy storage and combined heat and power generation.
- Involved in a deep exploration of the physical and thermodynamic properties of phase change materials, such as volume change, thermal conductivity, heat of fusion, and heat capacities.
- Developed a pioneering method to produce optimal FeSiB phase change materials using raw and waste materials through a metallothermic reduction method involving silicon and aluminum. This innovative manufacturing process has been successfully verified in three pilot-scale experiments at Elkem and is now patented in the United Kingdom.

- Collaborated closely with crucible producer Foseco to evaluate the stability of these phase change materials in a container under extensive long-term thermal cycling, ensuring their reliability and efficacy in practical applications.

5/2020 – 4/2022

Real Alloy Norge AS

Chemical Analyst and Production Engineer

- Led hydro- and pyrometallurgical experiments to refine aluminum dross, including
- pilot-scale trials to increase plant efficiency.
- Maintained product quality standards and drove process improvements across
- multiple European sites.
- Collaborated with research institutions and universities to enhance product quality and environmental standards.

PUBLICATIONS

1. **Jiao, Jianmeng**, Maria Wallin, and Merete Tangstad. "High-temperature reactions between molten CaO-B₂O₃ slag and graphite, SiC, and BN ceramics." *Ceramics International* (2025).
2. **Jiao, Jianmeng** et al. 'Aluminothermic reduction: a sustainable method for producing Fe₆₅Si₂₆B₉ phase change material' (Infacon 2024 conference, September, 2024)
3. **Jiao, Jianmeng** et al. 'Manufacturing of FeSiB high-temperature phase change material by silicothermic reduction' (Molten 2024 conference, June, 2024)
4. **Jiao, Jianmeng**, Sethulakshmy Jayakumari, Maria Wallin, and Merete Tangstad. "Graphite crucible interaction with Fe–Si–B phase change material in pilot-scale experiments." *High Temperature Materials and Processes* 42, no. 1 (2023): 20220288.
5. **Jiao, J.**, K. Tang, J. Safarian, and M. Tangstad. "The investigation of Fe-26Si-9B phase change material based on FactSage thermodynamic modelling." *THANOS* (2022): 63.
6. **Jiao, Jianmeng**, Jafar Safarian, and Merete Tangstad. "Fe-26Si-9B alloy as a Phase Change Material in Thermal Energy Storage System." *Proceedings of the Silicon for the Chemical & Solar Industry XVI* (2022).
7. **Jiao, Jianmeng**, Jafar Safarian, and Merete Tangstad. "The use of Fe-26Si-9B alloy as phase change material in Si₃N₄ container." *Crystals* 12.3 (2022): 376.
8. **Jiao, Jian Meng**, et al. "High temperature interaction between Si–B alloys and Si₃N₄." *Ceramics International* 47.10 (2021): 13837-13844.
9. **Jiao, Jian Meng**, et al. "The Use of Si-B Alloys in Thermal Energy Storage System." *Journal of Physics: Conference Series*. Vol. 1527. No. 1. IOP Publishing, 2020.
10. **Jiao, Jianmeng**, Jafar Safarian, Bettina Grorud, and Merete Tangstad. "High temperature interaction of Si-B alloys with graphite crucible in thermal energy storage systems." *Materials* 13, no. 1 (2019): 29.
11. **Jiao, Jianmeng**, Bettina Grorud, Caroline Sindland, Jafar Safarian, Kai Tang, Kathrine Sellevoll, and Merete Tangstad. "The use of eutectic Fe-Si-B alloy as a phase change material in thermal energy storage systems." *Materials* 12, no. 14 (2019): 2312.
12. **Jiao, Jian Meng**, Bettina Grorud, Jafar Safarian, and Merete Tangstad. "Wettability of molten Fe–Si–B alloy on graphite, Al₂O₃, and h-BN substrates." In *Proceedings of the Liquid Metal Processing & Casting Conference*, vol. 2019, pp. pp-425. 2019.

Ph.D Monography

1. Jiao, Jian Meng. "Si-based phase change materials in thermal energy storage systems." (2020).

LANGUAGES

- English - professional
- Norwegian (Bokmål) - Nivå B1
- Chinese – mother tongue