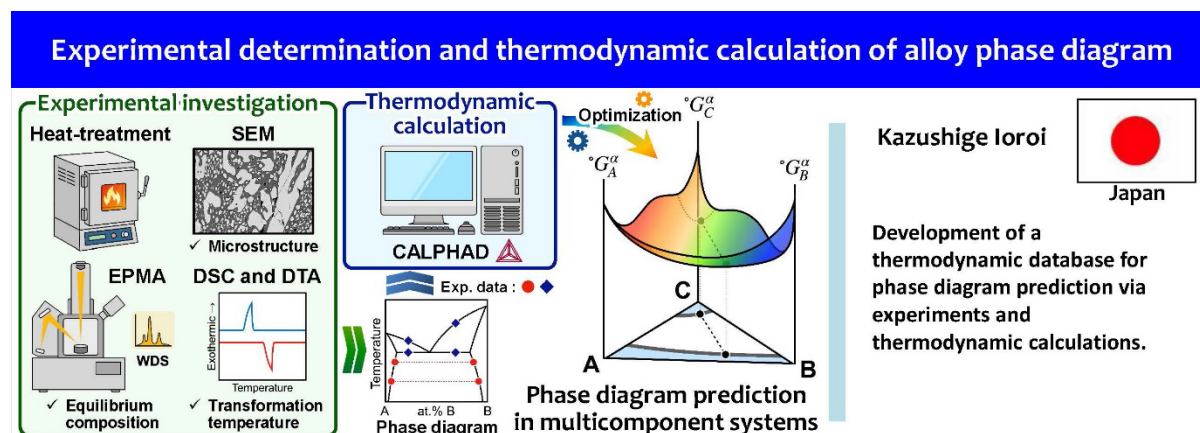


<Research Topics>

Experimental determination and thermodynamic calculation of alloy phase diagram

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■ Research

The demand for accelerated development of novel materials has never been greater, driven by the rapid evolution of AI and machine learning technologies. Alloy phase diagrams are powerful tools for the exploration of new materials, as they provide essential guidance for microstructural control and alloy design. However, precisely investigating phase equilibrium through traditional experimental methods is a time-consuming and costly process. To address this challenge, our research aims to establish a high-throughput experimental framework for phase diagram determination. By streamlining the acquisition of experimental data, we provide foundational datasets essential for establishing robust thermodynamic databases for multicomponent systems. Moving forward, this approach will facilitate the design of complex alloy systems, such as high-entropy alloys (HEAs), leading to breakthroughs in advanced structural and functional materials.

■ Comments

I joined ICYS following a three-year postdoctoral fellowship at Tohoku University. One of the most exciting aspects of ICYS is the opportunity to collaborate with researchers from diverse scientific backgrounds. This environment also allows me to pursue my own independent research projects. Having direct access to the state-of-the-art facilities at NIMS is another significant advantage. I look forward to evolving as a researcher through the stimulating environment and interdisciplinary interactions here at ICYS.

■ Link

<https://www.nims.go.jp/icys/research/#IOROI>