



## Digital-CPDDB

Cite this database:

Taichi ABE, Kiyoshi HASHIMOTO, Yumi GOTO, Yukiko SAWADA, Kiyomi HIROSE. “Digital-CPDDB”, *MatNavi*, National Institute for Materials Science. <https://doi.org/10.48505/nims.3061>

Digital-CPDDB では、難しいと考えられていた任意の温度や組成における、固相線や液相線や固溶度線の値を検索することが可能となりました。Digital CPDDB には、二元系状態図の画像ファイルの相境界をデジタル化 (pddb ファイル) して収録しています。また、Pandat による状態図計算結果も同様に収録しています。pddb ファイルは JSON 形式です。

検索や数値データ (pddb ファイル) の編集を行うためには Digital Phase Diagram System (以降 DigiPD) が必要となり、現在デモ版 Digital Phase Diagram System Viewer (以降 DigiPD(Demo)) を公開しています。DigiPD(Demo)と pddb ファイルを用いて、検索や pddb ファイルの編集を是非体験ください。

Digital-CPDDB のご利用には MatNavi ユーザ登録が必要です。登録・ログインは <https://cpddb.nims.go.jp/> から行ってください。

Digital-CPDDB enables to search for liquidus, solids, and solubilities at a given temperature or composition in the target systems. In this database, phase diagrams are digitalized from image files or dat files of PANDAT software. These digitalized data are stored as pddb files, which are written in JSON format. Digital Phase Diagram (DigiPD) system can search and edit the pddb file. Although it is currently a demo version and not allowed to save files, full version will be released soon. Till then, please try searching and editing pddb files on a demo version of DigiPD. Any feedbacks from users are welcome.

To use Digital-CPDDB, MatNavi user registration is required. For registration and log in, please go to <https://cpddb.nims.go.jp/en/>

Copyright © 2007–2021 National Institute for Materials Science

## About Digital-CPDDB Database

### Introduction

Current phase diagrams are mostly provided as image files [1], or in a printed form [2]. These formats are not suitable for further manipulations of phase diagram data and analysis in data science. Another format of phase diagrams can be found in the CALPHAD-type thermodynamic analysis where the phase diagrams are assessed critically and Gibbs energy functions of phases obtained in the assessments are provided as TDB (Thermodynamic DataBase) files. One can find them on our database, CPDDB (Computational Phase Diagram DataBase) [3]. They are valuable for materials science. However, it requires a solver of the Gibbs energy functions to calculate phase diagrams and thermodynamic quantities. In other words, the TDB format is not suitable for data science. This is one of the major difficulties to utilize the phase diagrams in other fields of science. Therefore, we are developing software for digitalizing phase diagrams, DigiPD, and constructing a digitalized phase diagram database, Digital-CPDDB.

### References

- [1] ASM alloy phase diagram database, [https://www.asminternational.org/home/-/journal\\_content/56/10192/15469013/DATABASE](https://www.asminternational.org/home/-/journal_content/56/10192/15469013/DATABASE)
- [2] Binary Alloy Phase Diagrams, 2nd edition, Eds. T.B. Massalski, H. Okamoto, P.R. Subramanian, and L. Kacprzak, ASM International, Materials Park, Ohio, USA, (1990).
- [3] Taichi Abe, Kiyoshi Hashimoto, Yumi Goto, Yukiko Sawada, and Kiyomi Hirose. CPDDB, *MatNavi*, National Institute for Materials Science, Tsukuba, Japan. <https://cpddb.nims.go.jp/en/>  
DOI: [10.48505/nims.3060](https://doi.org/10.48505/nims.3060)