

SpringerMaterials

The fastest solution for identifying material properties

- Comprehensive, curated data for major materials science areas
- Save time with search options optimized for materials science
- Enhanced data visualization and analysis options

Advanced
Interactivity



Quick and reliable insights accelerating materials science research

As the amount of scientific information exponentially increases, the need for critically evaluated and easily retrievable data becomes ever greater. Information must be cross-linked, updated, and presented in intuitive and readily accessible ways.

SpringerMaterials effectively addresses these challenges for materials science and closely related fields in chemistry, engineering, and physics. The database is a comprehensive resource of curated data covering 3,000 properties and 290,000 materials on one platform: materials.springer.com

Single platform access to curated data

Major material types



Property classes include



Data sources

- Classic Landolt-Börnstein series
- MSI Eureka, Linus Pauling Files – Inorganic Solid Phases
- Polymer Thermodynamics Database (ATHAS)
- Dortmund Databank of Separation Technology
- Springer Handbooks (e.g., VDI Heat Atlas)
- Adsorption Database, NIST Corrosion Database, SpringerMaterials Fundamentals Handbooks

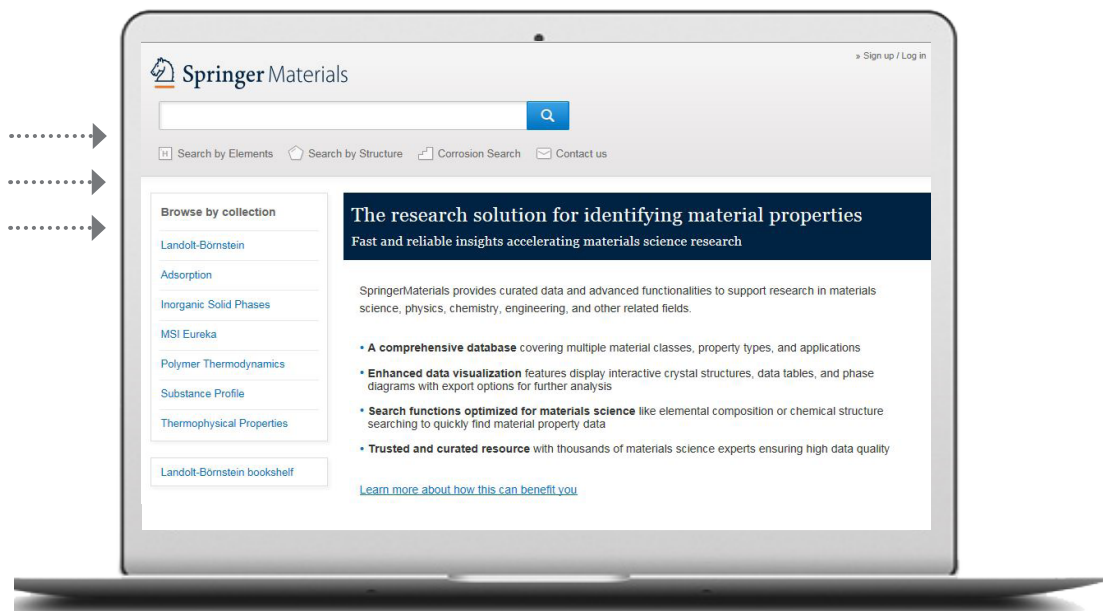
Content overview

| Content Class | Quantity |
|------------------------------|---|
| Phase Diagram Reports | 4,000 detailed reports |
| Interactive Phase Diagrams | 48,900+ binary and ternary systems |
| Crystal Structures | 327,000+ structures |
| Corrosion Data | 25,000 records for 1000+ metal systems and 275+ environments |
| Gas Adsorption Data | 5,800+ isotherms, 99 adsorbates, 1,355 adsorbents |
| Thermophysical Property Data | 472,000 data points for 1,200+ binary mixtures and 51 substances |
| Polymer Thermodynamic Data | 30,000 data points for 150 polymers & macromolecules |
| Book Content | 520+ volumes from 225,000+ documents in the Landolt-Börnstein, Springer Handbooks, SpringerMaterials Fundamentals and other related resources |
| Metal Foams | 450 datasheets |

SpringerMaterials – saving researchers time

Search options optimized for materials science

Search by Elements
Search by Structure
Corrosion Search

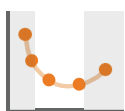


SpringerMaterials Interactive

As a multidisciplinary field, materials science draws on data from many topics in physics, chemistry, and engineering. Material property data, even for a single material, is often scattered across many sources. A set of workflow tools called **SpringerMaterials Interactive** addresses this challenge with the following features:

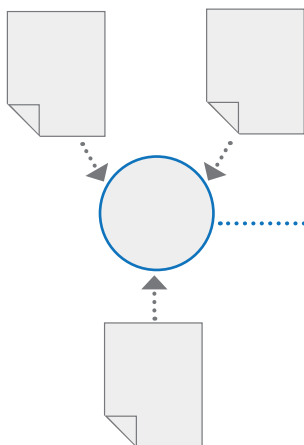
- Consolidation of data from multiple sources on a single graph or table
- Highly customizable data visualization options
- Side-by-side comparison of material properties
- Numerical property value search to find materials within a given property range

Interactive



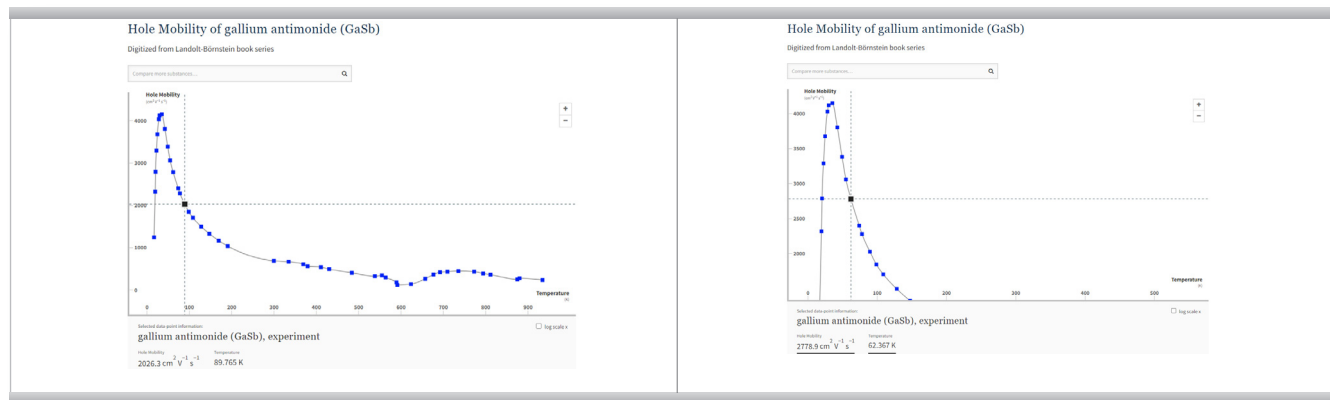
SpringerMaterials Interactive data is extracted primarily from the Landolt-Börnstein book series. This digitized data is then consolidated with relevant data from other sources to create these multisource data sets. Interactive data sets are highlighted on the platform with an interactive button.

Data Consolidation: presentation of multisource data

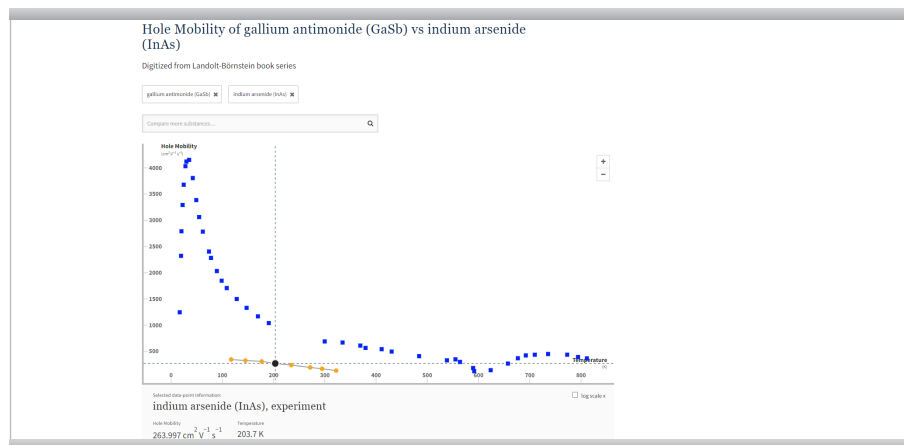


| | | | | | |
|-------------------------------|-------------------|-----|---|---------|--|
| $E_{g-dir} = 2.83 \text{ eV}$ | $T = 0 \text{ K}$ | GaP | $\Gamma 15v-\Gamma 1c$, calculated | P608509 | 172909. Scheffler (1984) |
| $E_{g-ind} = 2.36 \text{ eV}$ | $T = 0 \text{ K}$ | GaP | approximate value $\Gamma 15v-X1c$, calculated from fig. 1 | P608509 | 172909. Scheffler (1984) |
| $E_{g-dir} = 2.88 \text{ eV}$ | $T = 0 \text{ K}$ | GaP | calculated value for $\Gamma 15v$ - $\Gamma 1c$ transition | P900452 | 83949. Chen (1980) |
| $E_{g-ind} = 2.16 \text{ eV}$ | $T = 0 \text{ K}$ | GaP | calculated value for $\Gamma 15v$ - $X1c$ | P900452 | 83949. Chen (1980) |

Interactive Views: customizable data visualization



Material Comparisons: side-by-side views of material properties



Interactive
Views

Numerical Property Search: show all materials with given property range(s)

Springer Materials

surface tension >0.06mNm⁻¹

| Substance | Surface Tension (mN m ⁻¹) | System Temperature (K) | External Reference | Internal Reference |
|----------------|---------------------------------------|------------------------|---------------------------------|------------------------------|
| Ethane (pure) | 0.06 | 303.99 | Baidakov (1987) | LB IV/16, Pure Liquids: Data |
| Methane (pure) | 0.10 | 188.84 | Holcomb (1992) | LB IV/16, Pure Liquids: Data |
| Ethane (pure) | 0.13 | 302.44 | Baidakov (1987) | LB IV/16, Pure Liquids: Data |
| Methane (pure) | 0.17 | 188.06 | Blagoi (1970) | LB IV/16, Pure Liquids: Data |

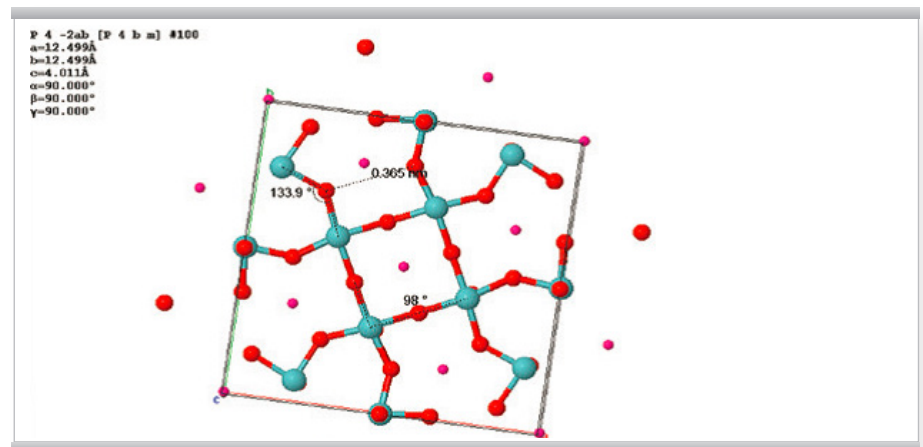
Additional Functionality

Built-in crystal structure viewer

View interactive crystal structures from published data and create your own personalized view. Measure angles and distances, display multiple unit cells, and easily export the customized image

SpringerMaterials is fast. The periodic table search provides intuitive, specific data, it's totally different from a conventional data search engine. The colorful 3-D crystal structure view not only provides direct knowledge on the bond length, bond angle, etc. but also leaves a very strong visual impression.

Prof. Jun Jiang, Chemical Physics
University of Science and Technology
of China



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Cite this content

Katharina Haußmann and MSIT® (1994)
Effenberg, G. (Ed.)
MSI Eureka in SpringerMaterials

The binary system As-I [12Jae]
Figure 2 from As-Cd-I Ternary Phase Diagram Evaluation
http://materials.springer.com/msi/phase-diagram/docs/sm_msi_r_10_022754_01_full_LnkDia1

10.22754.1.5 (MSI Materials Science International Services GmbH, Stuttgart © 1994)

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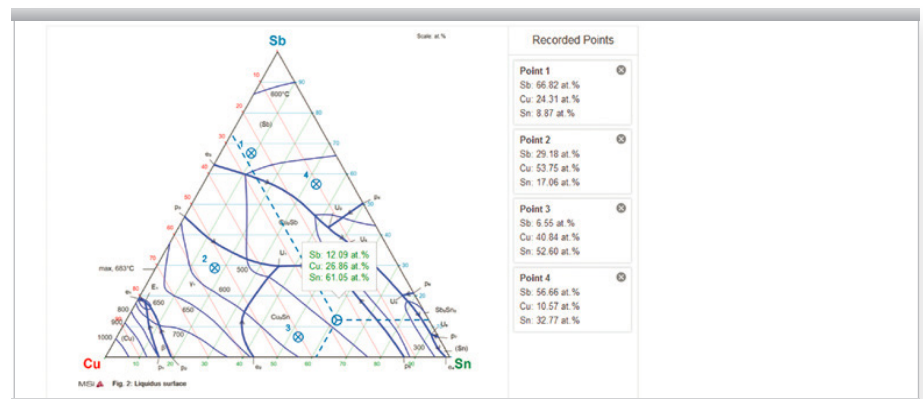
BibTex, JabRef (BIB)

EndNote (EndNote)

Papers, Zotero, Mendeley, Reference Manager, RefWorks (RIS)

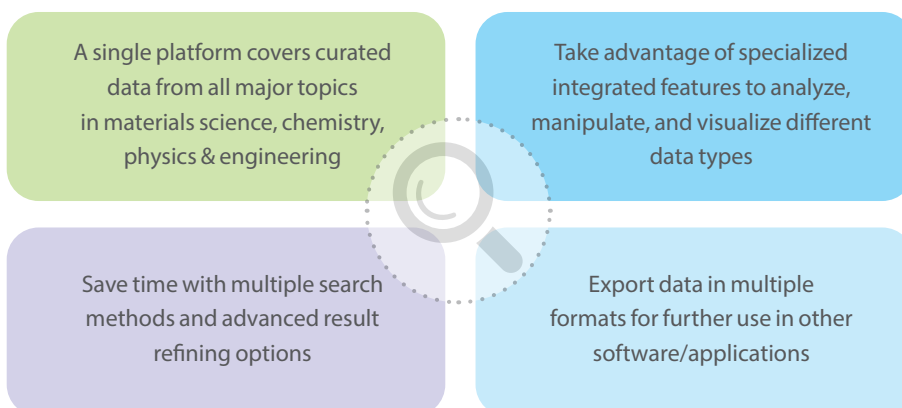
Exact data points with phase diagrams

Over 40,000 interactive phase diagrams include tools to determine phase transitions and record points of interest



SpringerMaterials research benefits

A useful database should be convenient for its users, the data should be very accurate and reliable, and the results found through a search should be of high relevance. In my opinion, SpringerMaterials is doing very well in all those three aspects.
Dr. Yafong Fan, Science Librarian
University of Science and Technology
of China



Benefits for Libraries

- Increase your institution's research productivity by offering a vast materials science database. Harnessing the scope and depth of SpringerMaterials minimizes the number of resources needing maintenance.
- Assurance that the database contains high quality curated content compiled by subject matter experts.
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