

Solid State Ionics

2 units (selection)

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Target This class introduces topics in solid state ionics, conduction mechanism in ionic conductors and techniques to study solid state ionics.

Outline Basic experimental and theoretical approaches to understand solid state ionics are introduced and discussed in terms of "ion dynamic" in ionic/superionic conductors.

Keyword *ionic conductor, ionic diffusion, secondary battery*

Notice 授業を受ける際には、2時間の授業時間毎に2時間の予習と2時間の復習をしたうえで授業を受けることが、授業の理解と単位取得のために必要である。

Goal

1. To understand basic physical and chemical properties of ionic conductors.
2. To understand basic technique to study ionic conductors.

Schedule

1. Introduction to solid state ionics
2. Band theory and conduction mechanism
3. Defect in Ionic crystal
4. Diffusion in solid
5. Diffusion mechanism in solid
6. Solid electrolyte - Oxides, Silver halide -
7. Solid electrolyte - Li compounds -
8. Mixed conductor
9. Electrical conductivity measurement
10. Electrical conductivity in ionic conductors
11. Nuclear Magnetic Resonance
12. Basic model of NMR relaxation
13. NMR study on ionic conductors
14. Application - Ion secondary batteries -
15. Topics and Future in solid state ionics

Evaluation Criteria Assignments count 100%.

Reference To be introduced in the class.

Contents <http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216652>

Contact

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