

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                         |                              |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------|-----------------|
| Division of Mechanical Science and Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Research field                                                                                          | Intelligent material systems | Lab. ID<br>ME15 |
| Laboratory web site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <a href="https://materials.w3.kanazawa-u.ac.jp/">https://materials.w3.kanazawa-u.ac.jp/</a>             |                              |                 |
| Research subjects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                         |                              |                 |
| Oure research subjects are as follows;<br>(1) Relationship between microstructure and hydrogen permeability of Nb-based multi-phase alloys for hydrogen separation and purification.<br>(2) Structural change of Mg-based alloys during hydrogenation and dehydrogenation.<br>(3) Mechanical properties of ultrafine grained metals, high entropy alloys and mille-feuille structured materials as next generation structural metals.<br>(4) Relationship between microstructure and properties (mechanical and electrical), and application for measurement methods.<br>(5) Fabrication and application of nanomaterials produced using plasma and lasers. |                                                                                                         |                              |                 |
| Message or comments by the laboratory faculty staffs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                         |                              |                 |
| Status of research such as experimental results, discussion, problems and so on is reported, and all of labo members discuss about it at the Labo meeting every week. Students have an opportunity to participate meetings held in Japan and foreign countries. Master's students are encouraged to work towards the goal of one paper.                                                                                                                                                                                                                                                                                                                     |                                                                                                         |                              |                 |
| Daily life in the laboratory, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                         |                              |                 |
| All of students can use experimental apparatus such as arc melting, electron microscope, x-ray diffractometer and so on.<br>A desktop PC is prepared for each student. (lending)<br>There are possibilities to visit large facilities such as SPring-8 and J-PARK.                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                         |                              |                 |
| Message or comments by the laboratory faculty staffs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                         |                              |                 |
| Opportunity of education through a research of metallic materials is provided for all students for the purpose of fostering engineers and researchers who play a important role all over the world. Students are required to concentrate your studies. Students can acquire an ability to perform by yourselves cyclic (1) planning of research, (2) executing of experiments, (3) discussion and (4) verification.<br>After belonging laboratory, please acquire fundamental social skills which erquired after graduation, in addition to concentrate a resarch. (MIYAJIMA)                                                                               |                                                                                                         |                              |                 |
| Laboratory mail address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | K. Ishikawa <ishikazu *at* se.kanazawa-u.ac.jp><br>Y. Miyajima <yoji-miyajima *at* se.kanazawa-u.ac.jp> |                              |                 |