Institute of Light Metals (ILM) Joint Usage/Research Grant Report in FY 2022

2023/MM/DD

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| Principal investigator | | Affiliation | Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology/  （Current）MRC, Kumamoto University | | |
| Job title | Professor/ (Current)Distinguished Professor | | |
| Name | Alexey Vinogradov | | |
| Collaborated researcher of ILM | | Affiliation | MRC, Kumamoto University | | |
| Job title | Professor, Director | | |
| Name | Yoshihito Kawamura | | |
| Title of the joint research | | Fine grain Grade 7 Titanium with exceptional properties profile | | | |
| Joint research Program  ※check the box | | □　Program for Joint Usage / Research Centers (JURC)  X　Program for International JURC  □　Program for providing samples and materials  □　Program for using ILM facilities for sample analysis and characterization | | | □ Focused themes  □ Transportation  X Biomaterials  □ Bridge/building materials  □ Kink strengthening  □　Independent research theme |
| Name of joint usage apparatus | |  | | | |
| Total amount of grant | Travel expense（ 100,000 JPY） | | | Consumable Fee（　　　　　　　　　　JPY） | |
| **Research Results**　**※Please describe following three items briefly.**  【The major results】  The project is still at the beginning and represents the collaborative research with Togliatti University. Up to date, tensile tests have been performed in air on rotary swaged Grade 7 Ti specimens processed to different strains. The results are favorably compared to those known in the literature for Grade 2 Titanium: the yield and ultimate strength reached 850 and 1000 MPa, respectively, with an elongation to failure of 9 %. Tensile and fatigue specimens have been fabricated for both ECAP and rotary swaged specimens. The corrosion cell for mechanical testing has been designed and manufactured. The fatigue/corrosion fatigue campaign will start in June 2023.  【Future Prospects】  Three publications are planned as a result of this research. The literature review will be completed in June 2023. New insights into new design of alloys with concurrently enhanced strength and corrosion performance anticipated upon accomplishment of the research plan. These insights will be used for external fund applications in 2023.  【Concrete results】  　See abobe | | | | | |
| **Notes**  ・Please use the form and submit to ILM office (mrc@kumamoto-u.ac.jp) by Friday, April 28, 2023.  ・The joint research report will be published in the ILM joint research report (annual report) and will be available on our website. Therefore, please prepare the contents for public release accordingly.  ・Please add pages, if needed. | | | | | |