

博士学位論文 審査結果の要旨

芝浦工業大学大学院 理工学研究科 博士（後期）課程

博士学位論文審査委員会

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氏 名	Malik Shadab
論文題目	Advancing Bulk MgB ₂ Superconductors: Innovative Techniques for Economical Production, Enhanced Grain Connectivity, and the Influence of Varied Boron Sources and Machining Precision. 超伝導体 MgB ₂ の大量生産の進展：経済的な製造、向上した粒子連結性、および異なるホウ素源と加工精度の影響に関する革新的な手法
〔論文審査の要旨〕 On July 31, 2024, the final PhD defense of Mr. Malik Shadab was successfully conducted via Zoom. The defense examination consisted of a 1-hour PowerPoint presentation followed by a 1-hour Q&A session and an evaluation of the examination results. A total of 19 attendees were present, including the five members of the defense committee. During the Q&A session, the committee members were pleased to note that the suggestions and advice provided during the initial defense had been thoroughly incorporated into the final thesis. Additionally, several other technical questions were raised, particularly concerning the technology of bulk MgB ₂ production. These included inquiries about the reproducibility of the critical current density (J_c), methods for further improving the properties of bulk MgB ₂ , expected results from using ultrasonicated boron in bulk MgB ₂ production by SPS, and its influence on the critical current density. Further questions explored the pinning effect and pinning type for AgMg phases, implications of combining boron with magnesium in the ball milling process, optimization of sintering temperature using SPS techniques, and key factors contributing to the improvement of the critical current density (J_c) in bulk MgB ₂ , including the role of ball milling and ultrasonication of boron powder. Mr. Shadab addressed all questions to the satisfaction of the committee members. Ultimately, the committee unanimously agreed to pass Mr. Shadab's final PhD defense.	