

Dr. Isabelle E. Thormann

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sworn and registered translator,
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SWORN TRANSLATION FROM GERMAN

Fraunhofer // EMI [Ernst-Mach-Institut]
Fraunhofer-Institut für Kurzeitdynamik
Ernst-Mach-Institut/EMI

Stefan Hiermaier
Prof. Dr.-Ing. habil.
Institute Director

Ernst-Zermelo-Straße 4
79104 Freiburg, Germany

Internship Certificate

Mr. Jun Young Hong, born on Nov. 03, 1990 in Seoul, South Korea, was employed with us as an intern in the working group Additive Design and Manufacturing of the department „Impact Physics" of our institute branch in Freiburg, Germany, full time from 16.09.2019 to 15.01.2020.

The Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut, EMI is an institute of the Fraunhofer-Gesellschaft. The Fraunhofer-Gesellschaft conducts applied research for the direct benefit of companies and society. Its contract partners and clients are industrial companies and service providers as well as the public sector. The Ernst-Mach-Institut specializes in the research of physical-technical aspects of high-speed mechanical and fluid-dynamic processes and has its main tasks in the fields of defense, security, automotive, space and aerospace.

Mr. Hong's tasks included the metallographic assessment of additively manufactured heavy-metal composite materials (WSM) to support the development of manufacturing parameters for selective laser melting. These are complex metal matrix composite systems. Mr. Hong applied EBSD and EDX analyses and carried out mechanical tests such as tensile tests or density determinations for material evaluation and assessment. Another central element of his work was the design and testing of first approaches for heat treatment of the resulting material.

Due to his extremely quick grasp and keen perception, Mr. Hong was immediately able to understand complex new developments and to estimate the consequences precisely. Even in precarious situations, he showed an impressive foresight, which enabled him to always come to an accurate and responsible judgment. Mr. Hong performed his duties with exemplary commitment and great personal dedication. He was always able to cope with even the greatest workload at any time. Mr. Hong always worked extremely attentively, prudently, very conscientiously and precisely. He always distinguished himself by his extraordinary reliability. In all situations, Mr. Hong achieved excellent work results.

Mr. Hong always fulfilled all tasks to our complete satisfaction. Mr. Hong's behavior was always exemplary. He was highly appreciated by his superiors and colleagues.

Mr. Hong left the Institute upon the expiration of his temporary work contract on January 15, 2020. We thank him for the always very good work and regret his departure very much. We wish him all the best, both professionally and personally, and continued success.

Freiburg, February 18, 2020

–signature –

Klaus Hoschke

Group manager

**Fraunhofer-Gesellschaft zur Förderung der angewandten
Forschung e. V., Munich, Germany**

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Attestation:

I, Isabelle Thormann, hereby certify that I translated the above document from German into English to the best of my ability, that I am competent in the two languages to render and certify such translations, and that the above is a true and correct translation. The attached photocopy is a true copy of the document submitted for translation. No responsibility is accepted for the correctness of the content of the document. Remarks by the translator in the text appear in square brackets.

Dr. Isabelle E. Thormann, officially approved, authorized, sworn and registered translator, registered seat in Braunschweig, Germany (Freyastr.2a, 38106 Braunschweig), www.business-german.biz. Member of ATA, CioL and BDÜ.

Braunschweig, Germany, January 25, 2021

