

## 2020年水化学部会賞 奨励賞の受賞感想

It is my honor to receive this award from Water Chemistry Division of Atomic Energy Society of Japan. Firstly, I would like to thank Professor Yutaka Watanabe (Tohoku University) for his support. Without him, I could not make such an achievement. In addition, I would like to express my thanks to the Water Chemistry Division of Atomic Energy Society of Japan. This society usually gives awards to researchers who made excellent research work, and this behavior certainly encourages many researchers and is certainly beneficial to the development of the science and technology.

My research work focuses on the environmental effects on the low-cycle fatigue behaviors of austenitic stainless steels in borated and lithiated high temperature water. This study found that within a certain range, the change of the concentration of dissolved hydrogen in the water had no significant effects on the low-cycle fatigue life and the hydrogen uptake of 316LN austenitic stainless steel. Moreover, my study found that a small amount of dissolved oxygen (50 or 100 ppb) can increase the low-cycle fatigue lives of 316LN and 316L austenitic stainless steels significantly compared to their low-cycle fatigue lives in the borated and lithiated high temperature water with dissolved oxygen less than 5 ppb. However, when a big amount of dissolved oxygen (1 ppm or 2 ppm) was added, the low-cycle fatigue lives of them decreased to a level closed to those in the water containing dissolved oxygen less than 5 ppb. This work can provide useful suggestions for the optimization of the water chemistry of pressurized water reactors, which is meaningful to the safety of the operation of nuclear reactors.

Currently, I am a third year Ph.D. student at Tohoku University and will receive my Ph.D. degree on 25th March, 2021. I would be a postdoctoral researcher at Tohoku University after my graduation and I hope I can contribute more to the field in the future. I thank the Water Chemistry Division of Atomic Energy Society of Japan again for giving me this award as I am deeply inspired by this award.

(東北大学 熊 一達)