

7th International Workshop on Long-Term Prediction of Corrosion Damage in Nuclear Waste Systems – LTC 2019

November 19-21, 2019, Nancy, France, EFC Event No. 443

Among the options considering how to deal with radioactive wastes, geological disposal is the internationally preferred method. Observing the degradation process and predicting the lifetime of the metallic barrier in a robust and reliable manner represents one of the greatest scientific and technical challenges for the manmade structures, since the required period for their integrity largely exceeds that of any industrial application. Therefore a series of workshops have been successfully organized exploring these issues: Cadarache, France (in 2001, EFC event no. 265), Nice, France (in 2004, in conjunction with EUROCR 2004), Pennsylvania State University, USA (in 2007, EFC event no. 301), Bruges, Belgium (in 2010, EFC event no. 329), Asahikawa, Japan (in 2013, EFC event no. 360), and Toronto, Canada (in 2016, EFC event no. 403). An international scientific committee is coordinating those events and includes well-known corrosion scientists from Belgium (Bruno Kursten, SCK CEN), Canada (Peter Keech, NWMO), China (En-Hou Han, IMR), Japan (Masato Kobayashi, RWMFRC), Sweden (Christina Lilja, SKB), Switzerland (Nikitas Diomidis, Nagra), UK (Cristiano Padovani, Jacobs), USA (Digby Macdonald, U.C. Berkeley) and France (Valérie Deydier, ANDRA and Damien Féron, CEA). The latest edition of these workshops has been held from November 19 to 21, in Nancy (France) as 7th international workshop on long-term prediction of corrosion damage in nuclear waste systems (or LTC 2019, EFC event no. 443). CEFRACOR (French corrosion association) organized the event with support of ANDRA (French national nuclear waste organisation) and CEA (French Alternative Energies and Atomic Energy Commission). The main objective of these workshops is to get together scientists and engineers from various countries that are developing high-level nuclear waste disposal technologies, with the goal of promoting scientific and technical exchanges concerning long-term behaviour of metallic containment materials and engineered barrier systems. The event succeeded to gather 70 participants from 15 countries (see Figure 1) with 38 oral presentations and 24 posters. In particular, the workshop compared the approaches that are being developed worldwide for predicting long-term corrosion phenomena, including corrosion strategies for interim storage and geological disposal. The 2019 edition has been divided into five oral and one poster session, which addressed the following items:

- Overview on national programmes with emphasis on similarities, common challenges and different approaches, legal issues, retrievability, etc.
- Experimentation with candidate materials, including laboratory tests, full-scale demonstration, in-situ testing, methodology (3 sessions: carbon steel, copper and other materials).
- Modelling, monitoring and design.

Also a best poster prize has been awarded to two young professionals. The winners of these prizes are Typhaine Guillemot (PSI, Switzerland) for her poster entitled *“Understanding the carbon speciation during iron corrosion in the alkaline anoxic conditions for safety assessment of*

radioactive waste repositories” and Joakim Halldin Stenlid (Stockholm University, Sweden) for his poster entitled *“On the cathode reaction for sulfide-induced copper corrosion”* (see Figure 2).

The workshop’s networking activities included extended coffee breaks, a technical tour and a gala dinner in the prestigious city hall of Nancy, where wine and food were greatly enjoyed together with friendly exchanges and a warm atmosphere (see Figure 3). The one-day technical tour was organized by ANDRA to the underground laboratory of Bure. This tour was part of the official workshop programme and was held the day before and the day after the workshop (Monday and Friday, November 18 and 22), because the number of participants was limited to 27. The underground lab visit was not only very instructive and well organized, but also greatly appreciated by the participants.

Finally it may be reported that LTC’s international scientific committee elected Bruno Kursten (SCK CEN) as its new Chairman and decided to propose to the EFC WP 4 to hold the next LTC workshop in Switzerland (organized by Nitikas Diomidis, Nagra) in 2022.



Figure 1: Group photograph of all attendees of the LTC 2019.



Figure 2: Typhaine Guillemot and Joakim Halldin Stenlid (centre) receiving the LTC 2019 best poster prizes with the members of the prize jury.



Figure 3: Welcome address by Damien Féron (left) during the gala dinner at the city hall of Nancy.