



International Forum

Interdisciplinary Challenge Mine and Environment

2022. 8. 16-17.

Ball Room “Big Dome” Radisson Blu Hotel,
Lusaka, Zambia

Japan International Cooperation Agency

Hokkaido University

University of Zambia

1. Program

Date Aug 16-17, 2022

Venue Hotel in Lusaka

Online https://zoom.us/webinar/register/WN_J0COmb7WTUOFFIkQ4GieoQ

(Register online at the above address and you will receive a URL for the webinar.)

Moderator Dr. Kaampwe Muzandu (University of Zambia)

Day 1 (Aug 16, 2022)

10:00-10:30	Opening remarks (JICA)
10:30-10:45	Introduction of guest participants
10:45-11:30	Overview of the Project (Hokkaido University & UNZA)
11:30-11:45	Q & A session
11:45-12:00	Photo Session
12:00-13:15	Lunch
13:15-14:15	Activity of KAMPAI project Group 1 (Elucidating a pollution mechanism in ecological system and human) <ol style="list-style-type: none">1. Strategies to Mitigate Pb pollution in soils, water and plants– Examples from Kabwe. (Dr. Ikabongo Mukumbuta)2. Effects of organic and inorganic amendments on lead, zinc and cadmium accumulation in maize grown in contaminated soils in Kabwe. (Patricia Mwilola)3. History and current situation of land-use and vegetation cover changes by analyzing 35-years of NDVI from LANDSAT in Kabwe, Zambia. (Yasuto Yoshida)4. Visualization of the plant cover in Kabwe using a web-based application. (Terumasa Yamamoto)5. Plants, soils and atmosphere in Kabwe - summary of Group 1 activities. (Prof. Yoshitaka Uchida)
14:15-14:30	Q & A session
14:30-14:45	Coffee break
14:45-16:45	Activity of KAMPAI project Group 2 (Follow up study to the harmful metal pollution in children) <ol style="list-style-type: none">1. Lead and Heavy Metals arising from unsustainable Mining activities

in Kabwe, Zambia. (Dr. John Yabe)

2. The impact of elevated blood lead levels in children on maternal health-related quality of life. (Dr. Nosiku Sipilanyambe Munyinda)
3. Lead Exposure and its Epi- (Genetic) Effects on Children in Kabwe, Zambia. (Dr. Yared Beyene Yohannes)
4. Economic assessment of lead poisoning and cost-benefit analysis of remediation measures. (Dr. Daichi Yamada)

16:45-17:00 Q & A session

Day 2 (Aug 17, 2022)

10:00-11:30 Activity of KAMPAI project Group 3 (Environmental remediation)

1. Overview of G3 (Dr. Marthias Silwamba)
2. Development of detoxification method for zinc plant leach residues by removing heavy metals using coupled extraction-cementation (CEC) process. (Dr. Marthias Silwamba)
3. The extent of pollution and bioaccessibility of lead and zinc from a legacy mine in Kabwe, Zambia, and immobilization of toxic elements by half-burnt dolomite. (Walubita Mufalo)

11:30-12:00 Policy Brief (Summary and Conclusion) of KAMPAI & DRINK Project (Prof. Imasiku Nyambe)

12:00-12:40 Invited Lecture: Global mercury issues, Minamata Convention, and cooperation activities of Japan (Idea Consultants, Inc.)

12:40-14:00 Lunch

14:00-16:00 Poster Session

16:00-16:30 Closing remarks (JICA)

2. Poster session

1. Patricia Mwilola
Effects of organic and inorganic amendments on lead, zinc and cadmium accumulation in maize grown in contaminated soils in Kabwe.
2. Moses Mulenga
Effects of chicken manure and chicken manure -derived biochar on the bioavailability and uptake of lead (Pb) in two Brassica vegetables.
3. Zungukanji Nachilongo
Evaluating the potential of *Cynodon dactylon* and *Imperata cylindrica* for phytoremediation in lead contaminated soils of Kabwe.
4. Rhoda Kabaso
Effect of biochar on chemical fractionation of lead and uptake by lemon grass in contaminated soils of Kabwe.
5. Gilbert Simasiku
Effect of increasing soil pH on the bio-availability of lead and zinc in polluted soils of Kabwe.
6. Andrew Kataba
Environmentally relevant lead levels induce neuromuscular, cardiovascular and oxidative stress systems derangements in zebrafish embryos.
7. Golden Zyambo
Evaluation of lead exposure in cow milk for risk assessment in Kabwe, Zambia
8. Yared Beyene Yohannes (Faculty of Veterinary Medicine, Hokkaido University)
Lead Exposure and its Epi- (Genetic) Effects on Children in Kabwe, Zambia
9. Soe Nyein Chan (Faculty of Veterinary Medicine, Hokkaido University)
Analysis of DNA methylation in canine brain from Kabwe, Zambia
10. Rio Doya (Faculty of Veterinary Medicine, Hokkaido University)
Land use and Dispersion Pattern Affect Exposure Levels of Lizard to Lead in Kabwe
11. Seigo Ishihara (Faculty of Veterinary Medicine, Hokkaido University)
Analysis of Lead Accumulation and Expression of Genes related to Glucose Metabolism in Wild Rats in High and Low Lead Contaminated Areas in Zambia
12. Marthias Silwamba
Econtamination of Zinc Leach Plant Residues: Recovery of extracted Lead in Leach Pulp by Cementation on ZVI
13. Ilhwan Park, Kensuke Seno, Kagehiro Magaribuchi, Carlito Baltazar Tabelin, Mayumi Ito, Naoki Hiroyoshi (Faculty of Engineering, Hokkaido University)

Carrier-microencapsulation using Al-catechol Complex for Suppressing Arsenic Release from Arsenopyrite

14. M. Silwamba, M. Ito, T. Fukushima, C. B. Tabelin, S. Takakuwa, N. Hiroyoshi, M. Chirwa, K. E. Banda, I. Nyambe (Faculty of Engineering, Hokkaido University & School of Mine, University of Zambia)
Decontamination of Zinc Leach Plant Residues: Recovery of Extracted Lead in Leach Pulp by Cementation on ZVI.
15. Silwamba M, Ito M, Fukushima T, Takakuwa S, Minatogawa K, Tabelin CB, Hiroyoshi N, Chirwa M, Band KE, Nyambe IA. (Faculty of Engineering, Hokkaido University & Geology Department, University of Zambia)
Characterization of zinc leaching residue in Kabwe area, Zambia
16. Hiroaki Kamegamori, Lawrence Kalab, Tsutomu Sato, Tsubasa Otake (Faculty of Engineering, Hokkaido University)
Geochemical behavior of heavy metals during treatment by phosphoric fertilizer at a dumping site in Kabwe, Zambia
17. Xinlong Li, Kosuke Naruwa, Carlito Baltazar Tabelin, Mayumi Ito, Naoki Hiroyoshi (Faculty of Engineering, Hokkaido University)
The Redox Properties of Metal Complexes with Catechol and its Derivatives
18. Sanghee Jeon, Hirotaka Takahashi, Rongrit Ponsumrankul, Shinya Tanaka, Carlito Baltazar Tabelin, Mayumi Ito, Naoki Hiroyoshi (Faculty of Engineering, Hokkaido University)
Synergistic effects of aluminum and other conductive particles on the cementation of gold ions in ammonium thiosulfate solution
19. Mayumi Ito, Kazuki Minatogawa, Naoki Hiroyoshi, Carlito Baltazar Tabelin (Faculty of Engineering, Hokkaido University)
Removal of vermiculite from cesium contaminated soil by magnetic separation.
20. Sharrydon Bright, Sanghee Jeon, Ilhwan Park, Mayumi Ito and Naoki Hiroyoshi (Laboratory of Mineral Processing & Resources Recycling , Graduate School of Engineering, Hokkaido University)
The effects of co-existing metal ions on the recovery of gold from thiosulfate solutions using aluminum and activated carbon.
21. Ilhwan Park, Seungwan Hong, Mayumi Ito, Naoki Hiroyoshi
Selective Coating for Improving MoS₂/CuFeS₂ Flotation (Faculty of Engineering, Hokkaido University)

22. Xinlong Li, Chie Harada, Naoki Hiroyoshi, Carlito Baltazar Tabelin, Ilhwan Park, and Mayumi Ito (Laboratory of Mineral Processing and Resources Recycling, Hokkaido University)

Comparison of the thermodynamics and electrochemical properties of various cation-catecholate complexes for carrier-microencapsulation

23. Hiroaki Kamegamori, Lawrence Kalaba, Tsutomu Sato , Tsubasa Otake (Faculty of Engineering, Hokkaido University)

Geochemical behavior of heavy metals during treatment by phosphoric fertilizer at a dumping site in Kabwe, Zambia