

RMW19 (OKABE60)



The 19th Workshop on Reactive Metal Processing

March 20 (Fri.) – 21 (Sat.), 2026 @ MIT/Cambridge

(After TMS 2026, March 15 (Sun.) – 19 (Thu.), 2026 @ San Diego, California)

Organizers:

Donald R. Sadoway

Toru H. Okabe

Antoine Allanore

Shunsuke Yagi

Massachusetts Institute of Technology

Institute of Industrial Science (IIS),

The University of Tokyo

Massachusetts Institute of Technology

IIS, The University of Tokyo

Program Coordinators:

Takanari Ouchi

Gavin Anthony Winter

Isaac Oda-Bayliss

Nathan Daniel Bradshaw

Thananun Rattanamaneejarat

IIS, The University of Tokyo

Massachusetts Institute of Technology

IIS, The University of Tokyo

Massachusetts Institute of Technology

IIS, The University of Tokyo

Sponsors

- The Rare Metal Research Workshop, one of the Special Research Groups organized by the Foundation for the Promotion of Industrial Science (FPIS)
- (RC-40: directed by Prof. T. H. Okabe, RC-104: directed by Prof. S. Yagi)
- Research Center for Sustainable Material Energy Integration (SUSMAT)
- Institute of Industrial Science, The University of Tokyo (IIS UTokyo SYMPOSIUM No.123)

<http://www.okabe.iis.u-tokyo.ac.jp/core-to-core/rmw>

The 19th Workshop on Reactive Metal Processing

(IIS UTokyo SYMPOSIUM No.123)

March 20 (Fri.) – March 21 (Sat.), 2026, MIT, Cambridge, MA

Time:

- 1st day: on March 20 (10:00 – 17:00 and Banquet at 18:30)
 - 2nd day: on March 21 (10:00 – 14:00)
- Refreshments will be served around 9:00 AM on both days.

Venue:

- **Haus Allen Room (MIT)**
- **Boston Marriott Cambridge**

Registration Fee:

\$300 / person

Organizers:

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|--------------------------------|--|
| Prof. Donald R. Sadoway | <i>Massachusetts Institute of Technology</i> |
| Prof. Toru H. Okabe | <i>IIS, The University of Tokyo</i> |
| Prof. Antoine Allanore | <i>Massachusetts Institute of Technology</i> |
| Prof. Shunsuke Yagi | <i>IIS, The University of Tokyo</i> |

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| Nathan Daniel Bradshaw | <i>Massachusetts Institute of Technology</i> |
| Thananun Rattanamaneejarat | <i>IIS, The University of Tokyo</i> |

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Contact:

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Workshop Program

Day 1

Morning, March 20 (Friday), 2026 @ Haus Allen Room (MIT)

9:00 – 10:00 **Coffee & Breakfast Service**

10:00 – 10:10 **Opening Remarks**

*Prof. Emeritus Donald R. Sadoway
Massachusetts Institute of Technology*

Session Chair: *Prof. Shunsuke Yagi*

10:10 – 11:00 **TBD**

*Toru H. Okabe
IIS, The University of Tokyo*

11:00 – 11:20 **Break**

Session Chair: *Prof. Antoine Allanore*

11:20 – 11:50 **TBD**

*Gavin Winter
Massachusetts Institute of Technology*

11:50 – 13:00 **Lunch**

Session Chair: *Prof. Adam C. Powell, IV*

13:00 – 13:30 **Development of extraction techniques for platinum group metals: alloying and chlorination pretreatments**

*Yuki Taninouchi
Kyushu University*

13:30 – 14:00 **Li₂S Production from Various Li Feedstocks using Chemical Potential Diagrams toward Next-Generation Rechargeable Batteries**

*Jungshin Kang
Seoul National University*

14:00 – 14:20 **Photo & Break**

Session Chair: *Dr. Taka Narumi*

14:20 – 15:20 **3-min Short Presentation by Poster Presenters**

15:20 – 16:20 **Poster Session at the Haus Room and Allen Room at Building 36**

18:00 – **Reception** @ Boston Marriott Cambridge

18:30 – **Banquet** @ Boston Marriott Cambridge

Day 2

Morning, March 21 (Saturday), 2026 @ Haus Allen Room (MIT)

9:00 – 10:00 **Coffee & Breakfast Service**

10:00 – 10:10 **Opening Remarks**

Prof. Antoine Allanore

Massachusetts Institute of Technology

Session Chair: *Prof. Ragnhild Elizabeth Aune*

10:10 – 10:40 **Density and Surface Tension Measurement for Molten TiO₂, ZrO₂, HfO₂ using Pendant Drop Method**

Osamu Takeda

Tohoku University

10:40 – 11:00 **Break**

Session Chair: *Prof. Yuki Taninouchi*

11:00 – 11:30 **Additive Manufacturing of Niobium-Based Refractory Alloys: Powder Development and Processing of C-103, FS-85 and Cb-752**

Katsuhiko Nose

Taniobis

11:30 – 12:00 **Magnesium Production in an Aluminum Smelter**

Adam C. Powell, IV

Worcester Polytechnic Institute

12:00 – 12:10 **Information for the Next RMW**

Shunsuke Yagi

IIS, The University of Tokyo

12:10 – 12:20 **Closing Remarks**

Toru H. Okabe

IIS, The University of Tokyo

12:20 – 13:30 **Lunch**

13:30 – **Laboratory Tour**

List of Poster Presenters

- 1. Electrochemical characterization of molten oxide melts for manganese deposition**
Braulio Beltrán-Pitarch¹,
¹Norwegian University of Science and Technology (NTNU)
- 2. ACV Measurements in Molten Systems**
Nathan Daniel Bradshaw¹,
¹Massachusetts Institute of Technology
- 3. Ammonia Synthesis in Molten Chloride Salt**
Xiaofei Guan¹,
¹ShanghaiTech University
- 4. Molten Oxide Electrolysis for Manganese Production - The Effect of Iron**
Gøril Jahrsengene¹,
¹SINTEF
- 5. Electrochemical behavior of oxygen-evolving anodes in LiCl-Li₂O electrolyte**
Hojong Kim¹,
¹Pennsylvania State University
- 6. Modeling and simulation of a flow electrolysis process for sustainable Iron production**
Omid Mahdavi¹,
¹Worcester Polytechnic Institute
- 7. Thermophysical Properties of Molten Iron Alloys**
Lucas Marden¹,
¹Massachusetts Institute of Technology
- 8. Recent study on the recycling process of zinc from EAF dust through selective chlorination, purification, and molten salt electrolysis**
Hiroyuki Matsuura¹,
¹The University of Tokyo
- 9. TBD**
Eve Meltzer¹,
¹Massachusetts Institute of Technology
- 10. The Sulfidation of Iron Oxides**
Matthew Michalek¹,
¹Massachusetts Institute of Technology
- 11. Kinetic Investigations of Ferronickel Dissolution and Sulfidation for Carbon-Free Nickel Separation**
Hrishikesh Nirgude¹,
¹Worcester Polytechnic Institute

12. **Redox of Cathode Active Material ZnMnO₃ and Electrolyte for Magnesium Batteries**
Ryotaro Otake¹,
¹Institute of Industrial Science, The University of Tokyo
13. **Development of SO₂ Depolarized Electrolysis Systems for Hydrogen Production**
Isaac Oda-Bayliss¹,
¹Institute of Industrial Science, The University of Tokyo
14. **Magnesium-Air Battery for Maritime Shipping**
Peter Poulos¹,
¹—
15. **Antimony-Doped alpha-MnO₂ for Magnesium Battery Positive Electrode Active Materials**
Thananun Rattanamaneejarat¹,
¹Institute of Industrial Science, The University of Tokyo
16. **Assessment of End-of-Life Solar Panel Glass for MoE of Si Electrolytes**
M. Akbar Rhamdhani¹,
¹Swinburne University of Technology
17. **Rapid production of pure titanium utilizing rare-earth oxyfluoride formation**
Kaneko Takumi¹,
¹Institute of Industrial Science, The University of Tokyo
18. **Electrowinning of Ferromanganese by Molten Oxide Electrolysis (MOE) with Consumable Iron Cathode**
Håkon Ulvik¹,
¹Norwegian University of Science and Technology (NTNU)
19. **Calcium phosphate in high temperature sulfidation environment**
Ava Waitz¹,
¹Massachusetts Institute of Technology
20. **Study on Ag/Cu Composite Catalysts for Multicarbon Product Generation via Electrochemical CO₂ Reduction**
Chubo Wang¹,
¹Institute of Industrial Science, The University of Tokyo
21. **CO₂-to-Formate Electrochemical Reduction Promoted by Defect-Driven Reconstruction of Bismuth Nanoflower Catalysts**
Jiaying Yan¹,
¹Institute of Industrial Science, The University of Tokyo

History of RMW

- 2006 **The 1st Workshop on Reactive Metal Processing (RMW1)**
March 17 (Fri.) - March 19 (Sat.), Cambridge, MIT
- 2006 **The 2nd Workshop on Reactive Metal Processing (RMW2)**
November 16 (Thurs.) - November 17 (Fri.), Tokyo, The University of Tokyo
- 2007 **The 3rd Workshop on Reactive Metal Processing (RMW3)**
March 2 (Fri.) - March 3 (Sat.), Cambridge, MIT
- 2008 **The 4th Workshop on Reactive Metal Processing (RMW4)**
March 14 (Fri.) - March 15 (Sat.), Cambridge, MIT
- 2010 **The 5th Workshop on Reactive Metal Processing (RMW5)**
February 18 (Thurs.) - February 19 (Fri.), Seattle, Red Lion Hotel on 5th Avenue
- 2011 **The 6th Workshop on Reactive Metal Processing (RMW6)**
March 4 (Fri.) - March 5 (Sat.), Pasadena, Caltech
- 2012 **The 7th Workshop on Reactive Metal Processing (RMW7)**
March 16 (Fri.) - March 17 (Sat.), Cambridge, MIT
- 2013 **The 8th Workshop on Reactive Metal Processing (RMW8)**
March 8 (Fri.) - March 9 (Sat.), Cambridge, MIT
- 2014 **The 9th Workshop on Reactive Metal Processing (RMW9)**
February 21 (Fri.) - February 22 (Sat.), Pasadena, Caltech
- 2015 **The 10th Workshop on Reactive Metal Processing (RMW10)**
March 20 (Fri.) - March 21 (Sat.), Cambridge, MIT
- 2016 **The 11th Workshop on Reactive Metal Processing (RMW11)**
February 19 (Fri.) - February 20 (Sat.), Cambridge, MIT
- 2017 **The 12th Workshop on Reactive Metal Processing (RMW12)**
March 3 (Fri.) - March 4 (Sat.), Cambridge, MIT
- 2018 **The 13th Workshop on Reactive Metal Processing (RMW13)**
March 16 (Fri.) - March 17 (Sat.), Cambridge, MIT
- 2019 **The 14th Workshop on Reactive Metal Processing (RMW14)**
March 15 (Fri.) - March 16 (Sat.), Cambridge, MIT
- 2020 **The 15th Workshop on Reactive Metal Processing (RMW15)**
February 28 (Fri.) - February 29 (Sat.), San Diego, UC San Diego
- 2023 **The 16th Workshop on Reactive Metal Processing (RMW16)**
March 24 (Fri.) - March 25 (Sat.), Cambridge, MIT
- 2024 **The 17th Workshop on Reactive Metal Processing (RMW17)**
March 24 (Fri.) - March 25 (Sat.), Cambridge, MIT
- 2025 **The 18th Workshop on Reactive Metal Processing (RMW18)**
March 28 (Fri.) - March 29 (Sat.), Cambridge, MIT

RMW1 in 2006 at MIT



RMW2 in 2006 at IIS



RMW5 in 2010 at Seattle



RMW17 in 2024 at MIT



