

Program of the 177th ISIJ Meeting (March 20-22, 2019)

Discussion Sessions

High Temperature Processes

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| Approaches to comprehension and control of cohesive zone phenomena in blast furnace | | | | |
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| D2 | Change of ash particle characteristics during reaction of cokes | Y. Ueki | • • • | 3 |
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| D3 | Relocation of droplet on coke surface in blast furnace | S. Ueda | • • • | 5 |
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| D10 | Effect of granulated carbonaceous material's layer on gas pressure drop through granulated slag packed bed with softening and melting behavior | K. Ohno | • • • | 21 |
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International Organized Sessions

High Temperature Processes

Activity of young researches and engineers of microwave processing in foreign countries

Session organizer: N. Yoshikawa [Tohoku Univ.]

10:25-10:30

Opening Address: N. Yoshikawa [Tohoku Univ.]

Chair: N. Yoshikawa [Tohoku Univ.]

10:30-10:50

Int.-1 Comparisons of temperature gradients and slag iron separations in ordinary blast furnaces and microwave iron making furnace

Chubu Univ. ○M. Sato, Tokyo Tech. K. Nagata, Pradeep Metals Ltd. P. Goyal · S. Borkar · · · 46

10:50-11:10

Int.-2 (Invited Lecture) Mechanical challenges in microwave assisted ironmaking prototype plant

Pradeep Metals Ltd. ○S. Bagade · P. Goyal · S. Borkar · N. Chandra,
Chubu Univ. M. Sato, Tokyo Tech. K. Nagata · · · 48

11:10-11:30

Int.-3 In-situ spectroscopy and two-dimensional two-color thermography during microwave ironmaking process

Tohoku Univ. ○J. Fukushima · H. Takizawa · · · 50

Chair: M. M. Mahmoud [King Fahd Univ., Saudi Arabia]

13:00-13:20

Int.-4 (Invited Lecture) Microwave transmission challenges in prototype pig iron production facility

Pradeep Metals Ltd. ○O. Gorakh · P. Goyal · S. Borkar · N. Chandra,
Chubu Univ. M. Sato, Tokyo Tech. K. Nagata · · · 52

13:20-13:40

Int.-5 (Invited Lecture) Metallurgical challenges in microwave assisted ironmaking prototype plant

Pradeep Metals Ltd. ○A. Borade · P. Goyal · S. Borkar · N. Chandra,
Chubu Univ. M. Sato, Tokyo Tech. K. Nagata · · · 55

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Int.-6 Mie theory in microwave heating of a powder

Chubu Univ. ○K. Kashimura · · · 58

Chair: Z. Peng [Central South Univ., China]

14:10-14:30

Int.-7 (Invited Lecture) Synthesis of silicon carbide nanowhiskers by microwave heating

Univ. Malaysia Perlis ○C. C. Lee · S. M. Kahar · C. H. Voon · · · 59

14:30-14:50

Int.-8 (Invited Lecture) Ultra-rapid heating of Si wafer and GaN thin film and microwave heating mechanism

Toyota Central R&D Labs. ○H. Fukushima · · · 63

14:50-15:10

Int.-9 (Invited Lecture) Enhancement of materials properties using microwaves

King Fahd Univ. ○M. M. Mahmoud · · · 67

Chair: C. C. Lee [Univ. Malaysia Perlis]

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Int.-10 (Invited Lecture) Design of carbon-containing pellets for reduction under microwave irradiation

Central South Univ. ○Z. Peng · L. Ye · L. Wang · A. Anzulevich · I. Bychkov · H. Tang ·
Q. Zhong · M. Rao · G. Li · T. Jiang · · · 71

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Int.-11 (Invited Lecture) Agglomeration properties of low-TiO₂ content titanomagnetite concentrates

Central South Univ. ○G. Li · C. Liu · Q. Zhong · Z. Peng · T. Jiang · · · 75

16:00-16:20

Int.-12 Our research history on microwave application to iron and steel field in 20 years

Tohoku Univ. ○N. Yoshikawa · · · 78

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Committee for Social Relations with Iron and Steel Sector

Innovative perspectives and techniques in a study of cultural materials

Opening Address: E. Izawa [Kyush Univ.], A. Giunlia-Mair [AGM Archeoanalisi]

Chairs: E. Izawa [Kyushu Univ.], A. Giunlia-Mair [AGM Archeoanalisi]

9:35-10:10

Int.-13 (Invited Lecture) Antiqua-inspired materials-exploring ancient technologies to inspire sustainable design
MIT ○A. Masic . . . 81

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Int.-14 Application of quantum beams to cultural objects: Toward elucidation of the manufacturing techniques and materials that are being lost
Showa Women's Univ. ○M. Tanaka, Hungarian Academy of Sciences L. Szentmiklosi . . . 82

Chairs: M. Tanaka [Showa Women's Univ.], Admir Masic [MIT]

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Int.-15 (Invited Lecture) Golden and silvery surfaces on ancient metal objects
AGM Archeoanalisi ○A. Giunlia-Mair . . . 83

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Int.-17 (Invited Lecture) Utilization of lead in Japan during the age of discovery
Teikyo Univ. ○Y. Hirao . . . 88

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Int.-18 (Invited Lecture) 10/25 years of lead isotope archaeology in Southeast Asia
French National Centre of Scientific Research ○T. O. Pryce . . . 92

Chairs: K. Nagata [Tokyo Tech.], T.O. Pryce [French National Centre of Scientific Research]

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Ritsumeikan Univ. ○B. Sabatini, Deutsches Bergbau-Museum Bochum Y. Hsu . . . 93

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Kyushu Univ. ○E. Izawa · T. Nakanishi . . . 95

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Concluding Remarks: A. Giunlia-Mair [AGM Archeoanalisi]

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Closing Address: Closing Address: E. Izawa [Kyush Univ.]

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