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<tr>
<th>Time</th>
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<tr>
<td>15:00pm - 17:30pm</td>
<td>Registration</td>
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<td>8:45am - 9:00am</td>
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<tr>
<td>9:00am - 9:10am</td>
<td>Welcoming Remarks (Charles W.W. NG, Associate Vice-President, Research and Graduate Studies)</td>
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<tr>
<td>9:10am - 10:10am</td>
<td>Opening Speech by Symposium Chairs:</td>
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<tr>
<td>9:20am - 10:10am</td>
<td>Plenary Lecture: Martin Sommerfeld (LT-J) Chair: Christopher YH Chao</td>
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<td>10:10am - 11:00am</td>
<td>Plenary Lecture: Tianshou Zhao (LT-J) Chair: Cai Xiaoshu</td>
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<td>11:00am - 11:30am</td>
<td>Group Photo and Coffee break</td>
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<td>11:30am - 12:20pm</td>
<td>Plenary Lecture: Yuich Murai (LT-J) Chair: Shigeo Hosokawa</td>
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<td>12:20pm - 13:50pm</td>
<td>Lunch (G/F Restaurant)</td>
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<td>14:00pm - 16:00pm</td>
<td>Experimental methods for multiphase flow (1)</td>
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<td>14:00pm - 16:00pm</td>
<td>Tomography and visualization techniques (1)</td>
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<td>Micro/Nano technology and Micro/Nano flows (1)</td>
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<td>Experimental methods for multiphase flow (2)</td>
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<td>Tomography and visualization techniques (2)</td>
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<td>16:00pm - 16:15pm</td>
<td>Coffee break</td>
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<td>16:15pm - 18:15pm</td>
<td>Experimental methods for multiphase flow (3)</td>
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<td>Optical, non-intrusive techniques (4)</td>
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<td>18:15pm - 20:30pm</td>
<td>Welcome Reception Dinner (G/F Restaurant)</td>
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<tr>
<td>9:00am - 9:50am</td>
<td>Plenary Lecture: Cameron Tropea (LT-J) Chair: Huihe Qiu</td>
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<td>9:50am-10:40am</td>
<td>Plenary Lecture: Hui Hu (LT-J) Chair: Koichi Hishida</td>
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<td>10:40am - 10:55am</td>
<td>Coffee break</td>
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<td>10:55am - 12:35pm</td>
<td>Experimental methods for multiphase flow (1)</td>
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<td>10:55am - 12:35pm</td>
<td>Fundamentals of measurement techniques (1)</td>
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<td>10:55am - 12:35pm</td>
<td>Novel sensors and measurement methods (1)</td>
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<td>Optical, non-intrusive techniques (1)</td>
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<td>Lunch (G/F Restaurant)</td>
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<td>Experimental methods for multiphase flow (4)</td>
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<td>Fundamentals of measurement techniques (4)</td>
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<td>Coffee break</td>
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<td>16:15pm - 17:55pm</td>
<td>Experimental methods for multiphase flow (5)</td>
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<td>16:15pm - 17:55pm</td>
<td>Fundamentals of measurement techniques (5)</td>
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<td>16:15pm - 17:55pm</td>
<td>Other advanced measurement techniques (1)</td>
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<td>16:15pm - 17:55pm</td>
<td>Optical, non-intrusive techniques (5)</td>
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<tr>
<td>17:55pm - 21:00pm</td>
<td>Symposium Banquet</td>
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Wednesday (December 6, 2017)

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<tr>
<th>Time</th>
<th>Experimental methods for multiphase flow (6)</th>
<th>Computational methods for multiphase flow (1)</th>
<th>Information technology for multiphase flow</th>
<th>Ultrasound/Acoustic techniques</th>
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<td>WE1-A1-SMTMF-R001-216 WE1-B1-SMTMF-R001-004 WE1-C1-SMTMF-R001-010 WE1-D1-SMTMF-R001-223</td>
<td>WE1-A2-SMTMF-R001-106 WE1-B2-SMTMF-R001-025 WE1-C2-SMTMF-R001-002 WE1-D2-SMTMF-R001-057</td>
<td>WE1-A3-SMTMF-R001-158 WE1-B3-SMTMF-R001-035 WE1-C3-SMTMF-R001-211 WE1-D3-SMTMF-R001-069</td>
<td>WE1-A4-SMTMF-R001-128 WE1-B4-SMTMF-R001-097 WE1-C4-SMTMF-R001-120 WE1-D4-SMTMF-R001-086</td>
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<td>13:30pm - 16:30pm</td>
<td>Campus Tour</td>
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<td>18:00pm - 20:00pm</td>
<td>Invited Dinner (By Invitation Only)</td>
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Thursday (December 7, 2017)

Wednesday (December 6, 2017)

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<th>Time</th>
<th>Experimental methods for multiphase flow (7)</th>
<th>Computational methods for multiphase flow (2)</th>
<th>Novel sensors and measurement methods (3)</th>
<th>Other advanced measurement techniques (2)</th>
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Remarks: Room A = Lecture Theater J  Room B = Lecture Theater K  Room C = Room 5619  Room D = Room 5620

Session Description: Example for MON1-A1-SMTMF-R001-001:

MON1—Monday, 1st Session
A1—The first paper in Room A (Lecture Theater J)
SMTMF-R001-001—Paper D
ISMTMF’17 PROGRAM

Sunday (December 3, 2017)
15:00 pm – 17:30 pm  Registration  Venue: Front Desk of LTJ

Monday (December 4, 2017)
08:30 am - 09:00 am Registration  Venue: Front Desk of LTJ
09:00 am - 09:10 am Welcoming Remarks (Charles W.W. NG)  Venue: LTJ
09:10 am - 09:20 am Opening Speech (Symposium Chairs)  Venue: LTJ

Plenary Lecture (MON-P1)  Chair: Christopher YH Chao  Venue: LTJ
09:20 am - 10:10 am  Multi-scale experimental analysis of binary droplet collisions, Martin Sommerfeld.................................................................ii

Plenary Lecture (MON-P2)  Chair: Xiaoshu Cai  Venue: LTJ
10:10 am - 11:00 am  Tackling Challenges in Energy Storage Using Thermo-Fluid Science, Tianshou Zhao .................................................................v

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11:30 am - 12:20 pm  Velocity profiling rheometry for dispersed multiphase fluids, Yuichi Murai .................................................................vi

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Venue: LTJ

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Chairs: Lixing Zhou and Hosei Nagano

14:00pm - 14:20pm  
(MON1-A1) Developing Measurement and Simulation of Swirling Gas-Particle Flows, Lixing Zhou (ISMTMF-R001-001)……………………………2

14:20pm - 14:40pm  
(MON1-A2) Experimental studies of droplet deformation and breakup in ethanol-oil system in a DC electric field, Dongbao Wang, Junfeng Wang, Hailong Liu, Weihan Hu (ISMTMF-R001-007)…………………………3

14:40pm - 15:00pm  
(MON1-A3) Removal efficiency of pollutant and microbial community structure with filter material increased in up-flow BAF, Jiehui Ren, Wen Cheng, Tian Wan, Min Wang, Meng Jiao, Ting Meng, Xiaohan Zhang (ISMTMF-R001-016)…………………………………………4

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(MON1-A4) Effect of aerated stomatic distribution on bubble plume movement in a cylindrical aerated tank, Tian Wan, Wen Cheng, Jiehui Ren, Min Wang, Ting Meng, Ying Wang (ISMTMF-R001-018)………………5

15:20pm - 15:40pm  
(MON1-A5) The study on the degradation of ofloxacin in aquatic by using US / H2O2 and UV / H2O2, Meng Ting, Cheng Wen, Wang Min, Wan Tian, Wang Ying (ISMTMF-R001-099)…………………………………………6

15:40pm - 16:00pm  

Session MON1-B Tomography and visualization Techniques (1)  
Venue: LTK

(14:00pm - 16:00pm)  
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14:00pm - 14:20pm  
(MON1-B1) Real-time Two Dimensional Imaging of Gas/Solid Multiphase Using An Electrical Capacitance Tomography System, Min Ma and Chaoqi Yan (ISMTMF-R001-013)……………………………10

14:20pm - 14:40pm  
(MON1-B2) Position Information Matrix Method for Ultrasound Transmission Tomography, Wei Zhang, Chao Tan and Feng Dong (ISMTMF-R001-070)………………………………………………11

14:40pm - 15:00pm  
(MON1-B3) A novel calibration method for electrical capacitance tomography applying in high-temperature gas-solid fluidized bed

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measurement, Qiang Guo, Shuanghe Meng, Mao Ye, Wuqiang Yang and Zhongmin Liu (ISMTMF-R001-048)…………………………….12

15:00pm - 15:20pm (MON1-B4) Incomplete Electrode Array for Electrical Capacitance Tomography, Benyuan Sun, Ziqiang Cui, Shihong Yue and Huaxiang Wang (ISMTMF-R001-075)………………………………………..13

15:20pm - 15:40pm (MON1-B5) Six-layer color tomographic imaging of 3-D mist density distribution, Yuhei Sugano, Hyun Jin Park, Yuji Tasaka, Yuichi Murai (ISMTMF-R001-040)………………………………………………….14

15:40pm - 16:00pm (MON1-B6) A New Image Reconstruction Method for Electrical Resistance Tomography Based on Inverse Radon Transform, Xin Gao, Zhang Cao, and Lijun Xu (ISMTMF-R001-225)………………...……16

Session MON1-C Micro/Nano Technology and Micro/Nano Flows (1)  Venue: 5619

(14:00pm - 16:00pm) Chairs: Zhiyao Huang and Dezhong Wang

14:00pm - 14:20pm (MON1-C1) Reduction of skin friction drag using patterned superhydrophobic surface, Bingfu Zhang, Hui Tang and Sandy To (ISMTMF-R001-079)……………………………………………….18

14:20pm - 14:40pm (MON1-C2) Experimental study on three dimensional bubble shape evolution in swirling flow, Tingting Zhang Junlian Yin and Dezhong Wang (ISMTMF-R001-074)……………………………………………….19

14:40pm - 15:00pm (MON1-C3) Void fraction and pressure drop measurement of gas-liquid slug flow in square microchannels, Ryo Kurimoto, Yusuke Deguchi, Hisato Minagawa and Takahiro Yasuda (ISMTMF-R001-102)………20

15:00pm - 15:20pm (MON1-C4) Effect of surface properties on quenching characteristics of high-temperature body, Yutaro Umehara, Koji Enoki, Wei Liu, Tomio Okawa (ISMTMF-R001-113)………………………………………………….22

15:20pm - 15:40pm (MON1-C5) Deformation and breakup of droplets covered with viscoelastic film in microfluidic channel, Xiaoxiao Han, Zhengyuan Luo and Bofeng Bai (ISMTMF-R001-041)……………………………………….23

15:40pm - 16:00pm (MON1-C6) Experimental study on particle trapping in a microchannel using gas-liquid interface, Yukinobu Ohnishi, Atsuhide Kitagawa, Petr Denissenko and Yuichi Murai (ISMTMF-R001-044)…………………………….24
Session MON1-D Optical, non-intrusive techniques (1)  
Venue: 5620

(14:00pm - 16:00pm) Chairs: Chuanlong Xu and Hyun Jin Park

14:00pm - 14:20pm (MON1-D1) Measurement the release characteristic of K and Na during single particles of biomass combustion using flame emission spectrum, Weijie Yan and Chun Lou (ISMTMF-R001-005)……………………………..27

14:20pm - 14:40pm (MON1-D2) Voxel-rainbow visualizations of mutual interactions between microbubbles and turbulent vortical structures on a vertical plate, Daichi Saito, Hyun Jin Park, Yuji Tasaka, Yuichi Murai (ISMTMF-R001-027)…………………………………………………28

14:40pm - 15:00pm (MON1-D3) Thermal stratification pattern of smoke flow of tunnel fires with longitudinal ventilation, Tonghui Jiang, Xishi Wang, Haiyong Cong, Pei Zhu (ISMTMF-R001-038)……………………………………30

15:00pm - 15:20pm (MON1-D4) Measurement of subcooled boiling flow and three-dimensional reconstruction of bubble transport behavior, Atsushi Ui, Masahiro Furuya, Hiroki Takiguchi, Kenetsu Shirakawa, Takahiro Arai and Kenichi Katono (ISMTMF-R001-049)……………………………………31

15:20pm - 15:40pm (MON1-D5) Study of Tomographic Particle Image Velocimetry Based on Dual Light Field Camera, Lixia Cao, Chuanlong Xu, Biao Zhang, Shimin Wang (ISMTMF-R001-020)……………………………………32

15:40pm - 16:00pm (MON1-D6) Combined PIV and PTV measurements of particle-laden gravity current, Zhuang Su and Cunbiao Lee (ISMTMF-R001-083)….33

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Venue: LTJ

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16:55pm - 17:15pm (MON2-A3) Investigations into CO₂ transient behaviors in a horizontal pipeline during flexible CCS operation, Wenbiao Zhang, Hongchao Wang, Ding Shao, Shi Liu, Yong Yan and Tao Wang (ISMTMF-R001-022) ........................................................................................................ 38

17:15pm - 17:35pm (MON2-A4) Research on division characteristics and mechanism of slurry pipeline in complex terrain, Jun Ma, Jiande Wu, Bo Ye, Xin Xiong, Weiquan Deng, Jun Bao, (ISMTMF-R001-215) ...................... 39

17:35pm - 17:55pm (MON2-A5) Pressure drop of wet gas with low liquid loading flowing through DP meters, Xuebo Zheng and Bofeng Bai (ISMTMF-R001-029) ........................................................................................................ 40

17:55pm - 18:15pm (MON2-A6) Experimental and numerical investigation of erosion by liquid-solid impinging jet, Yanlin Zhao, Jun Yao, Shaoheng Ge and Zihua Zeng (ISMTMF-R001-030) ................................................................. 41

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16:15pm - 16:35pm (MON2-B1) Visualization on the Evolution of Electro-spraying of Ethanol with Double-capillary, Lei Xia, Zhentao Wang, Junfeng Wang, Yuanping Huo, Huibin Xu (ISMTMF-R001-104) ........................................ 43

16:35pm - 16:55pm (MON2-B2) Visualization of Two-Phase Flow through a Packed Bed of Spheres in a Circular Pipe, Daisuke Ito, Milka Nava Rivera, Kei Ito, Yasushi Saito, Mitsuhiro Aoyagi, Kenichi Matsuba and Kenji Kamiyama (ISMTMF-R001-111) ............................................................... 44

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17:55pm - 18:15pm  (MON2-B6) Visualization of Internal Flow for Loop Heat Pipe under Microgravity, Hosei Nagano and Yuta Matsuda (ISMTMF-R001-100) ................................................................. 49

Session MON2-C Micro/Nano Technology and Micro/Nano Flows (2)  Venue: 5619

(16:15pm - 18:15pm)  Chairs: Zhigang Li and Tomio Okawa

16:15pm - 16:35pm  (MON2-C1) Spreading characteristics of nanofluids droplet impinging on the solid surface, Hai-long Liu, Rui Wang, Xue-chong Ding, Xue-feng Shen, Jun-feng Wang (ISMTMF-R001-125) ........................................ 51

16:35pm - 16:55pm  (MON2-C2) Scale up Synthesis of Mono Disperse Nickel Ferrite NiFe2O4 Nanoparticles by Microwave Combustion Method, Muhammad Imran Din (ISMTMF-R001-222) ........................................ 52

16:55pm - 17:15pm  (MON2-C3) Surface and Temperature Effects on Heterogeneous Ice Nucleation, Chu Li, Xiang Gao, and Zhigang Li (ISMTMF-R001-224) .............................................................. 53

17:15pm - 17:35pm  (MON2-C4) Improving Droplet Impact Performance by Doubly Re-entrant Closed-cell Surfaces, Dong Liao, Minghao He and Huihe Qiu (ISMTMF-R001-228) .............................................................. 54

17:35pm - 17:55pm  (MON2-C5) Influence of in-phase pulsed flow to stream in T-microchannels, Aleksandra Kravtsova and Yury Meshalkin (ISMTMF-R001-112) .............................................................. 55

17:55pm - 18:15pm  (MON2-C6) Bubble Dynamics in a Flow Boiling Microchannel with Chemically Patterned Surfaces, Hongzhao Wang and Huihe Qiu (ISMTMF-R001-229) .............................................................. 56

Session MON2-D Optical, non-intrusive techniques (2)  Venue: 5620

(16:15pm - 18:15pm)  Chairs: Huaichun Zhou and Hui Tang
16:15pm - 16:35pm (MON2-D1) Measurement of temperature and soot volume fraction of an axisymmetric ethylene laminar flame using a hyper-spectral imaging device, Huawei Liu and Huaichun Zhou (ISMTMF-R001-064)..............58

16:35pm - 16:55pm (MON2-D2) Research on the On-Line Measurement Technology of Pulverized Coal Particle Size Distribution Based on Automatic Sampling Image Method, Guoxun Wu, Xiaobin Huang, Jiemin Ye and Yang Liu (ISMTMF-R001-076).........................................................59

16:55pm - 17:15pm (MON2-D3) Application of Photobleaching Molecular Tagging Velocimetry to highly concentrated particle flow, Motoki Koyama, Tomoaki Watamura, Fumiya Iwatsubo and Kazuyasu Sugiyama (ISMTMF-R001-082)...............................................................60

17:15pm - 17:35pm (MON2-D4) Development of Micro Bubble Size Classification Device by Control of External Forces, Akira Nakashima, Koichi Hishida (ISMTMF-R001-085).................................................................61

17:35pm - 17:55pm (MON2-D5) Refocusing of Light Field Images for Particles Based on Hexagon Splicing and Size Change Algorithm, Yuanchi Ma, Wu Zhou, Tianlei Qian, Xiaoshu Cai (ISMTMF-R001-054).................................63

17:55pm - 18:15pm (MON2-D6) Experimental study on the effect of high temperature and high pressure on flow characteristics in a bubbling fluidized bed via visual image, Lin Li, Lunbo Duan, Yuanqiang Duan, Weijia Zheng, Chuanlong Xu (ISMTMF-R001-063).........................................................64

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Plenary Lecture (TUE-P5) Chair: Koichi Hishida Venue: LTJ
09:50 am - 10:40 am Development of Advanced Measurement Techniques to Characterize Multiphase Flows Pertinent to Aircraft Icing Phenomena, Hui Hu .................viii
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Session TU1-A Experimental methods for multiphase flow (3)   Venue: LTJ

(10:55am - 12:35pm)  Chairs: Xishi Wang and Yasuhiro Sugimoto

10:55am - 11:15am  (TU1-A1) PIV measurement of the interaction of water mist spray with a tilted gas jet, Pei Zhu, Xishi Wang, Yangpeng Liu, Guochun Li (ISMTMF-R001-037)…………………………………………………66


11:35am - 11:55am  (TU1-A3) Heat transfer enhancement of natural convection from a vertical heated plate by a combination of bubble injection and functional plates, Atsuhide Kitagawa, Nakatani Mitsuhito, Yutaro Nagai and Yuichi Murai (ISMTMF-R001-043)……………………………………69

11:55am - 12:15pm  (TU1-A4) Experimental study on oil-water swirling flow in a horizontal pipe, Hua Li, Shiying Shi and Yingxiang Wu  (ISMTMF-R001-045)...71

12:15pm - 12:35pm  (TU1-A5) Measurement of the condensation liquid film in the supersonic vapor behind the shock wave, Haidong Zhu  (ISMTMF-R001-036)…………………………………………………...…………72

Session TU1-B Fundamentals of measurement techniques (1)   Venue: LTK

(10:55am - 12:35pm)  Chairs: Masahiro Takei and Nan Gao

10:55am - 11:15am  (TU1-B1) Micro particle image velocimetry based on plenoptic light field imaging, Xianglei Song, Chuanlong Xu, Lixia Cao, Shimin Wang (ISMTMF-R001-021)…………………………………………………74

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