



United Nations/Malaysia Expert Meeting on Human Space Technology

**14 – 18 November 2011
Putrajaya, Malaysia**

**Hosted by:
Institute of Space Science (ANGKASA), Universiti Kebangsaan Malaysia**

**Co-organised by:
Canadian Space Agency (CSA), European Space Agency (ESA),
Japan Aerospace Exploration Agency (JAXA),
National Aeronautics and Space Administration (NASA),
Russian Federal Space Agency (ROSCOSMOS)**

**In cooperation with:
Astronautic Technology Sdn Bhd (ATSB[®]), National Space Agency of Malaysia (ANGKASA),
Universiti Malaysia Pahang (UMP)**

Programme

**Venue: Pullman Putrajaya Lakeside,
No.2, Jalan 5/5
Presint 5, 62200 Putrajaya
Malaysia**

Programme
United Nations/Malaysia
Expert Meeting on Human Space Technology
Putrajaya, Malaysia, 14-18 November 2011

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- Dr. Takao Doi (UNOOSA)
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Programme

All session will be held at Room Putra 4 & 5, Pullman Putrajaya Lakeside unless otherwise stated

<i>Monday, 14 November 2011</i>	
<i>Morning</i>	
08:00	<u>Registration</u>
08:40	<u>Arrivals of VIP</u>
09:00	<u>Recital Prayer</u>
09:05	<u>Welcome Addresses</u> <ul style="list-style-type: none"> ○ Prof. Dr. Mohd. Alauddin Mohd. Ali, Director, Institute of Space Science (ANGKASA), UKM ○ Prof. Dr. Mazlan Othman, Director, United Nations Office for Outer Space Affairs (UNOOSA)
09:15	<u>Keynote Address by Dr. Mustafa Din Subari, Director General, National Space Agency of Malaysia (ANGKASA)</u>
09:45	<i>Photo Session, Morning Break</i>
10:15	<u>Commemoration of 50th Anniversary of Human Space Flight</u> <ul style="list-style-type: none"> ○ By Dr. Boris Zagreev, Russian Federal Space Agency (Roscosmos) ○ By Dr. Julie Robinson, National Aeronautics and Space Administration (NASA) ○ By Dr. Liwei Yang, China Manned Space Engineering Office (CMSEO) ○ By Dr. Nicole Buckley, Canadian Space Agency (CSA) ○ By Dr. Tai Nakamura, Japan Aerospace Exploration Agency (JAXA)
12:25	<u>General Announcements</u>
<i>12:30</i>	<i>Lunch</i>

<i>Afternoon</i>		
14:00	<u>Introduction to the Human Space Technology Initiative</u>	
	<ul style="list-style-type: none"> ○ By Prof. Dr. Mazlan Othman, Director, UNOOSA ○ By Dr. Takao Doi, Head, United Nations Programme on Space Applications, UNOOSA 	
14:30	<u>Microgravity Science I (General Science)</u>	
	<i>Chairperson: Dr. Jack van Loon</i>	
	<i>Rapporteur: Ms. Farah Hani Abd Rahim</i>	
14:30	Fundamental Physics for and in Space	<i>Prof. Dr. Claus Kurt Oskar Lämmerzahl, ZARM, Germany</i>
14:50	Crystallization of Industrially Important Enzymes / Protein in Space	<i>Prof. Dr. Raja Nor Zaliha Raja Abd Rahman, UPM, Malaysia</i>
15:10	Effect of Space Flight on Bacterial Growth and Gene Expression Profiles of Enterobacter Cloacae	<i>Prof. Dr. Ramelah Mohamed, UKM, Malaysia</i>
15:30	An Affordable Access to Experiments on the ISS – Commercial Opportunities for Microgravity Research	<i>Dr. Peter Kern, Astrium Space Transportation, Germany</i>
15:50	<i>Tea Break</i>	
16:20	<u>Microgravity Science II (Life Science)</u>	
	<i>Chairperson: Prof. Dr. Alexander Horsch</i>	
	<i>Rapporteur: Ms. Farah Hani Abd Rahim</i>	
16:20	Microgravity Sciences and Space Biology at National Microgravity Laboratory in China	<i>Prof. Dr. Mian Long, Chinese Academy of Science, China</i>
16:40	Enhanced Inflammation and Endothelial Cell Activation in both Immediate and Revived Live Endothelial Cells Following Spaceflight Mission	<i>Prof. Dr. Hapizah Nawawi, UiTM, Malaysia</i>
17:00	Impact of Microgravity on The Expression of Multi-Drug Resistant Proteins and Membrane Transporter Genes in Jurkat Cells	<i>Prof. Dr. A. Rahman A. Jamal, UKM, Malaysia</i>
17:20	Manipulation of Gravity Using a Random Positioning Machine	<i>Dr. Jack van Loon, VU-University / ESA-ESTEC, The Netherlands</i>
17:40	<u>Introduction to Working Groups</u> (Organisational Aspects)	
18:00	<i>End of Day 1</i>	
20:00	<i>Reception Dinner and Opening Ceremony</i> <i>(Officiated by Prof. Tan Sri Dato' Wira Dr. Sharifah Hapsah Syed Hasan Shahabudin, Vice-Chancellor, Universiti Kebangsaan Malaysia (UKM))</i> <i>Hosted by the Institute of Space Science (ANGKASA), UKM</i>	

Tuesday, 15 November 2011

Morning

09:00	<u>International Space Station Programmes</u>	
	<i>Chairperson: Dr. Takao Doi</i> <i>Rapporteur: Ms. Rawaida Aifaa Ismail</i>	
09:00	The International Space Station: Canada's Contribution and Utilisation	<i>Dr. Nicole Buckley, CSA</i>
09:20	ISS Exploitation and Elips Programme	<i>Dr. Martin Zell, ESA</i>
09:40	JAXA's ISS/Kibo Utilization Program	<i>Dr. Tai Nakamura, JAXA</i>
10:00	US Research and Technology Development on the International Space Station	<i>Dr. Julie Robinson, NASA</i>
10:20	Program of Scientific and Applied Experiments on the ISS Russian Segment	<i>Dr. Boris Zagreev, Roscosmos</i>
10:40	<i>Morning Break: Poster Session PS-1, Hardware Demonstration HD-1</i>	
11:10	<u>National, Regional and International Space Programmes I</u>	
	<i>Chairperson: Dr. Tai Nakamura</i> <i>Rapporteur: Ms. Rawaida Aifaa Ismail</i>	
11:10	China's Manned Space Programme	<i>Dr. Liwei Yang, CMSEO</i>
11:40	JAXA Cooperation Activities with Asian Countries on Kibo/ISS Utilization through APRSAF	<i>Dr. Shigeki Kamigaichi, JAXA</i>
12:00	Activities of the Nigerian Space Agency and Prospects of Human Spaceflight Program	<i>Dr. Akeem Babatunde Rabi, National Space Research and Development Agency, Nigeria</i>
12:20	<i>Lunch</i>	
Afternoon		
14:00	<u>Education, Outreach & Capacity Building I</u>	
	<i>Chairperson: Prof. Dr. Mohd. Alauddin Mohd. Ali</i> <i>Rapporteur: Mr. Irwan Affendi Md. Naim</i>	
14:00	Canada's Educational Activities on the ISS	<i>Dr. Nicole Buckley, CSA</i>
14:20	JAXA Educational Activities on the ISS	<i>Dr. Tamotsu Nakano, JAXA</i>
14:40	US Educational Activities on the International Space Station	<i>Dr. Julie Robinson, NASA</i>
15:00	UNESCO's Science Education and Space Activities	<i>Dr. Masami Nakata, UNESCO</i>
15:20	Malaysia Education Programme in Commemoration of National "Angkasawan" Programme	<i>Mr. Mohd. Fairos Asillam, National Space Agency of Malaysia (ANGKASA), Malaysia</i>
15:40	<i>Tea Break: Poster Session PS-2</i>	

16:10	<p><u>Working Group Session I (plenary)</u> <i>Chairperson: Prof. Dr. Alexander Horsch</i> <i>Rapporteur: Ms. Ingrid Dietlein</i></p>	
	<p>Human Space Technology Initiative (HSTI) Introduction: ISS Benefit to Humanity Missions by Dr. Julie Robinson, NASA</p>	
17:20	<p><i>Short Break</i></p>	
17:30	<p><u>Working Group Session II</u></p>	
	<p>Microgravity Science (Room: Putra 4 & 5) <i>Chairperson:</i> <i>Dr. Jack van Loon</i> <i>Rapporteur: Ms. Farah Hani Abd Rahim</i></p>	<p>Education, Outreach & Capacity Building (Room: Seri Bestari 2) <i>Chairperson:</i> <i>Prof. Datuk Dr. T. Subahan Mohd. Meerah</i> <i>Rapporteur: Mr. Irwan Affendi Md. Naim</i></p>
18:30	<p><i>End of day 2</i></p>	

Wednesday, 16 November 2011

Morning

09:00	<u>National, Regional and International Space Programmes II</u>	
	<i>Chairperson: Prof. Dr. Claus Kurt Oskar Lämmerzahl</i> <i>Rapporteur: Ms. Rawaida Aifaa Ismail</i>	
09:00	Korean Astronaut Program Overview	<i>Dr. Soyeon Yi, Korea Aerospace Research Institute</i>
09:20	Space Technology Application Areas for Health in an Inclusive Global Information Society	<i>Prof. Dr. Alexander Horsch, Institute for Medical Statistics (IMSE), TU Munich, Germany</i>
09:40	Potential for Telemedicine and Telemetry in the Maldives	<i>Mr. Ahmed Shafeeq Moosa, The President's Office, Maldives</i>
10:00	Czech Space Activities Focussed to Human Spaceflight	<i>Mr. Michal Vaclavik, Czech Space Office, Czech Republic</i>
10:20	The National Strategy, Current Activities for Space Technology, Development and Application in Vietnam	<i>Dr. Lai Anh Khoi, Space Technology Institute (STI), Vietnam Academy of Science and Technology, Vietnam</i>
<i>10:40</i>	<i>Morning Break: Poster Session PS-3, Hardware Demonstration HD-2</i>	
11:10	<u>Education, Outreach & Capacity Building II</u>	
	<i>Chairperson: Mr. Mhd Fairos Asillam</i> <i>Rapporteur: Mr. Irwan Affendi Md. Naim</i>	
11:10	Research and Educational Opportunities in a Microgravity Environment for Developing Nations	<i>Dr. Ontonyo Eric Mangete, African Regional Centre for Space Science and Technology Education-English (ARCSSTE-E), Ile-Ife, Osun State, Nigeria</i>
11:30	Strategies for Implementation of Space Science and Technology Programmes for Developing Economies: Case Study of Ghana	<i>Dr. Shiloh Kwabena Dedeh Osae, Graduate School of Nuclear and Allied Sciences, University of Ghana, Ghana</i>
11:50	Building a Viable Capacity for Space Technology Development in Africa	<i>Prof. Paul Baki Olande, Kenya Polytechnic University College, Kenya</i>
12:10	Capacity Building in Space Technology Through Low Cost Programme Initiatives	<i>Mr. Mohammad Yousuf Khan, Pakistan Space & Upper Atmosphere Research Commission (SUPARCO), Pakistan</i>
<i>12:30</i>	<i>Lunch</i>	

<i>Afternoon</i>		
14:00	<u>Microgravity Science III (General Science)</u>	
	<i>Chairperson: Prof. Mian Long</i> <i>Rapporteur: Ms. Farah Hani Abd Rahim</i>	
14:00	20th Anniversary of Microgravity Experiments at the Drop Tower Bremen and 25th Anniversary of the Center of Applied Space Technology and Microgravity (ZARM)	<i>Dr. Thorben Könemann, ZARM, Germany</i>
14:20	Microbes in Microgravity – Mechanism of Acinetobacter Baumannii Survival and Adaptation in Microgravity	<i>Prof. Dr. Sazaly Abu Bakar, UM, Malaysia</i>
14:40	Osteoblastic Cellular Functions during Space Flight	<i>Dr. Gabriele Anisah Froemming, UiTM, Malaysia</i>
15:00	HSTI Science Activities	<i>Mr. Aimin Niu, UNOOSA</i>
15:20	<i>Tea Break: Poster Session PS-4</i>	
15:50	<u>Working Group Session III (plenary)</u> <i>Chairperson: Prof. Dr. Alexander Horsch</i> <i>Rapporteur: Ms. Ingrid Dietlein</i>	
	Human Space Technology Initiative (HSTI)	
17:20	<i>Short break</i>	
17:30	<u>Working Group Session IV</u>	
	Microgravity Science (Room: Putra 4 & 5) <i>Chairperson: Dr. Jack van Loon</i> <i>Rapporteur: Ms. Farah Hani Abd Rahim</i>	Education, Outreach & Capacity Building (Room: Seri Bestari 2) <i>Chairperson: Prof. Datuk Dr. T. Subahan Mohd. Meerah</i> <i>Rapporteur: Mr. Irwan Affendi Md. Naim</i>
18:30	<i>End of day 3</i>	

Thursday, 17 November 2011

Morning

9:00	<u>National, Regional and International Space Programmes III</u>		
	<i>Chairperson: Mrs. Zahira Mohd Radzi Rapporteur: Ms. Rawaida Aifaa Ismail</i>		
9:00	Low Earth Orbit Spacecraft Formation Flying for Equatorial Missions from Orbital and Performance Measures Considerations	<i>Prof. Harijono Djodihardjo, UPM, Malaysia</i>	
9:20	Satellite Anomaly Information System (SIAS) for Identifying The Satellite Operation Disturbance	<i>Mr. Nizam Ahmad et al., Space Science Center (PUSSAINSA) – LAPAN, Indonesia</i>	
9:40	Space Programme of Pakistan and Possible Contribution in Human Space Technology Initiative (HSTI)	<i>Mr. Jawed Qureshi, Pakistan Space & Upper Atmosphere Research Commission (SUPARCO), Pakistan</i>	
10:00	Turkey's Space Endeavour: Brief Background and Possible Collaborations	<i>Dr. Celal Sami Tufekci, Yildiz Technical University, Turkey</i>	
10:20	The Phase I of the Space Seed for Asian Future 2010-2011 Program in Vietnam and the Lessons Learned	<i>Mr. Diep Huu Nguyen, Space Technology Institute, Vietnam Academy of Space & Technology, Vietnam</i>	
<i>10:40</i>	<i>Morning Break: Poster Session PS-5</i>		
11:10	<u>Working Group Session V</u>		
	Microgravity Science (Room: Putra 4&5) <i>Chairperson: Dr. Jack van Loon Rapporteur: Ms. Farah Hani Abd Rahim</i>	Education, Outreach & Capacity Building (Room: Seri Bestari 2) <i>Chairperson: Prof. Datuk Dr. T. Subahan Mohd. Meerah Rapporteur: Mr. Irwan Affendi Md. Naim</i>	Human Space Technology Initiative (HSTI) (Room: Seri Bestari 3) <i>Chairperson: Prof. Dr. Alexander Horsch Rapporteur: Ms. Ingrid Dietlein</i>
<i>12:30</i>	<i>Lunch</i>		
	<i>Afternoon</i>		
13:30	<i>Transfer from hotel to Planetarium</i>		
14:30	<u>Facility Tour and Astronauts Public Forum</u> Planetarium, Kuala Lumpur Moderator: Prof. Ir. Dr. Ahmad Faizal Mohd Zain With participation of Astronauts: <ul style="list-style-type: none"> ○ Dr. Sheikh Muszaphar Shukor (Malaysia) ○ Dr. Liwei Yang (China) ○ Dr. Soyeon Yi (Republic of Korea) ○ Dr. Takao Doi (UNOOSA/Japan) 		
20:00	<u>Cultural Dinner (Saloma Bistro, Kuala Lumpur), hosted by Institute of Space Science (ANGKASA), UKM</u>		

Friday, 18 November 2011

Morning

09:00	<u>Joint Working Group Session</u> <i>Moderator: Dr. Takao Doi</i> <i>Rapporteur: Ms. Ingrid Dietlein</i> <i>Round Table Speakers:</i> <i>Prof. Dr. Mohd. Alauddin Mohd. Ali</i> <i>Prof. Dr. Alexander Horsch</i> <i>Dr. Jack van Loon</i> <i>Prof. Datuk Dr. T. Subahan Mohd. Meerah</i> <i>Dr. Akeem Babatunde Rabi</i> <i>Dr. Boris Zagreev</i>
<i>10:30</i>	<i>Morning Break</i>
11:30	<u>Wrap Up Session</u> <i>Chairperson: Dr. Takao Doi</i> <i>Rapporteur: Ms. Ingrid Dietlein</i> <ul style="list-style-type: none">○ Review of the Expert Meeting, approval of recommendations, and discussions of future activities <u>Closing Remarks</u>
<i>12:30</i>	<i>Adjourn</i>
<i>12:30</i>	<i>Lunch</i>

Poster sessions scheduled during break time, 14 – 18 November 2011

Poster Session	Title	Author
PS-1 15 Nov. a.m.	Gene Expression Changes in Space Flown Caenorhabditis Elegans Exposed to a Long Period of Microgravity	R. Jamal (UKM), J. Nurul-Faizah (UKM), S. M. Then (UKM), S. Nathan (Malaysia Genome Institute), N. J. Szewczyk (University of Pittsburgh), L. S. Stodieck (Bioserve), R. Harun (UKM)
PS-1 15 Nov. a.m.	Changes in Gene Expression of HepG2 Cells Exposed to Microgravity and Space Radiation	S. M. Then (UKM), A. A. N. Khairul-Bariah (UKM), R. Rageshwary (UKM), N. Fazlina (UKM), W. N. Wan-Zurinah (UKM), H. Roslan (UKM), D. M. Klaus (Bioserve & University of Colorado), L. S. Stodieck (Bioserve & University of Colorado), R. Jamal (UKM)
PS-1 15 Nov. a.m.	Protein and Gene Expression of Inflammation and Endothelial Activation by Endothelial Cells Cultured in Flat-Based Containers with VS, without Microcarries and Simulated Temperature Changes Associated with Space Travel	Muid S. (UiTM), Froemming GRA (UiTM), Manaf A. (UNISZA), Nawawi H. (UiTM)
PS -2 15 Nov. p.m.	Inflammation, Endothelial Activation and Apoptosis are not Effected by Short Term Simulated Microgravity in Endothelial Cells	Muid S. (UiTM), Gershovich J. (Institute of Biomedical Problems, Moscow, Russia), Froemming GRA. (UiTM), Manaf A. (UNISZA), Buravkova L. (Institute of Biomedical Problems, Moscow, Russia), Nawawi H. (UiTM)
PS -2 15 Nov. p.m.	Cellular Attachment and Cytoskeletal Changes in HepG2 Cells Grown in A 3-D Culture System in Space	R. Jamal (UKM), Tee, L. (Curtin Univ. of Technology), S. M. Then (UKM), A. A. N. Khairul-Bariah (UKM), N. Fazlina (UKM), R. Rageshwary (UKM), W. N. Wan-Zurinah (UKM), D. Klaus(Curtin Univ. of Technology), L. Stodieck (Bioserve), H. Roslan (UKM)
PS -2 15 Nov. p.m.	Structural Changes of The Endothelial Cells after Short Outer Space Flight	Kapitonova M.Yu,(UiTM) Muid S.,(UiTM) Froemming G.R.A.,(UiTM) Yusoff W.N.H.,(UiTM) Othman S. (UiTM), Manaf A. (UNISZA), Nawawi H.(UiTM)
PS -3 16 Nov. a.m.	The Effects of Space Flight on Gene Expression Profiles of Enterobacter Cloacae	MR. Nurul Shielawati (UKM), M.Ramelah (UKM), SM.Then (UKM), H.Roslan (UKM), R.Jamal (UKM), H.Alfizah (UKM), Mohd Cairul Iqbal Mohd Amin (UKM) ,D. Klaus(Bioserve), L. Stodieck (Bioserve)
PS -3 16 Nov. a.m.	Influence of Non-Microgravity Stressors on Osteoblastic Markers during Launch, Spaceflight and Landing	Aisha M. D. (UiTM), Norita. S. (UiTM), Salina O. (UiTM), Nor-Ashikin M. N. K. (UiTM), Sharaniza A. R. (UiTM), Nawawi H. (UiTM), Kapitonova M. (UiTM), Froemming G. R. A. (UiTM)
PS -3 16 Nov. a.m.	Sustained Inflammation and Endothelial Activation in Revived Live Endothelial Cells Following Space Flight Travel	Muid S. (UiTM), Froemming G. R. A. (UiTM), Manaf A. (UNISZA), Nawawi H. (UiTM)
PS -4 16 Nov. p.m.	Academic and Research Strategies: Issues and Challenges	Prof. Anjana Narendra Vyas, CEPT University, India
PS -4 16 Nov. p.m.	Educating Astronomy before IYA and Now	Mr. Jayanta Acharya, Balmeeki Campus, NSU, Nepal
PS -5 17 Nov. a.m.	Structural Changes of Normal Human Osteoblastic Cells During Space Flight	Kapitonova M. Yu. (UiTM), Salim N. (UiTM), Hafiz MK (UiTM), Shahir AR (UiTM), Nawawi MH (UiTM), Ali M. (Universiti Darul Iman), Froemming G. R. A. (UiTM)
PS -5 17 Nov. a.m.	Effect of Short Term Space Flight Mission on Osteoblast Cell Function Markers	Salim N (UiTM), Nawawi H (UiTM), Manaf A. (Universiti Darul Iman), Said MSM (UiTM) and Froemming GRA (UiTM)

**Hardware demonstration scheduled during break time,
14 – 18 November 2011:**

Hardware Demonstration	Title	Author
HD-1 15 Nov. a.m.	Demonstration of the Random Positioning Machine (RPM) and Model Large Diameter Centrifuge (LDC)	<i>Dr. Jack van Loon, VU-University / ESA-ESTEC, Netherlands</i>
HD-2 16 Nov. a.m.	Development of a Life Science Experiment – A class Room Lecture with Hardware Demonstration	<i>Dr. Peter Kern, Astrium Space Transportation, Germany</i>

Appendix I

SESSION GUIDELINE

I. Objectives of Sessions

Presentation Session:

To exchange information and to learn from other people's work

Working Group Session:

We are planning to have three working groups. They are Microgravity Science, Education, Outreach & Capacity Building, and the UN Human Space Technology Initiative (HSTI). Each working group has the following phases:

(1) Observation Phase: To identify any issues and problems in countries which are trying to implement specific programmes.

(2) Recommendation Phase: To discuss how to resolve any issues and problems identified in (1) and to provide recommendations.

Joint Working Group Session (Round Table Session):

(1) To share observation and recommendations identified in different Working Groups.

(2) To consolidate and draft recommendations

Wrap Up Session

To finalize recommendations

II. How to Run the Sessions

Presentation Session:

Each presenter is given 20 minutes (15 minutes for the presentation and 5 minutes for Q/A).

Working Group Session:

(1) Ask each participant to choose one (in principle) working group to join.

(2) Focus on identifying issues and problems in implementing specific objectives.

(3) Discuss how to resolve issues and problems identified in (2).

(4) Provide recommendations for each issue and problem identified in (2).

Joint Working Group Session (Round Table Session):

We are planning to have three chairpeople of working groups and three experts (to be selected) at the round table.

(1) Each working group chairperson will present observation and recommendations of his/her working group.

(2) Experts on the round table will make comments on any findings identified in (1).

(3) The session will be open to the floor for further comments.

(4) Final recommendations will be drafted.

Wrap Up Session:

(1) Review the final recommendations.

(2) Participants will endorse the final recommendations.