



S&T Newsletter



A Quarterly of the
Centre for Science and Technology of the Non-Aligned
and Other Developing Countries (NAM S&T Centre)

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From the Director'S Desk

Warmest greetings to our esteemed readers!!



We organised an out-of-the-routine scientific event in this quarter - an International Workshop on Science, Technology & Innovation Diplomacy (Sciplomacy) titled 'Perspectives on Science and Technology Diplomacy for Sustainable Development in NAM and Other Developing Countries' - which was held at Manesar (Haryana), India during 27-30 May 2014 jointly with the Department of Science and Technology (DST), Government of India. 36 experts on international relations, professionals and diplomats from 22 countries attended this Workshop, which completed with unanimous adoption of the 'Manesar Declaration - 2014'. During the Inaugural Session, the workshop participants got introduced with the Mentor and Vice President, NAM S&T Centre, Prof. K. VijayRaghavan, FRS, Secretary to the Government of India, DST in Skype conferencing mode. He also 'Skype'-released two new books published by the Centre.

The above publications brought out by the Centre in the last quarter were, respectively, 'Science & Technology Diplomacy in Developing Countries' edited by Dr. Bernard J. Zahuranec (USA), Prof. Venugopalan Ittekkot (Germany) and Mrs. Elizabeth Montgomery (USA), and 'Contemporary Management Strategies in Intellectual Property Rights (IPR) relevant to NAM and Other Developing Countries' edited by Mrs. Sarah Norkor Anku (Ghana), Mrs. Olufolake Sola Davies (Nigeria) and Ms. Rungano Karimanzira (Zimbabwe).

The Centre introduced a new NAM S&T Centre - DST (South Africa) Training Fellowship scheme on Minerals Processing & Beneficiation jointly with the Department of Science and Technology (DST), Government of South Africa and has invited applications for the year 2015. The Fellowship aims to provide opportunity to the scientists and technologists from the member countries of the Centre for affiliation with MINTEK, South Africa for a period of 3 months. Last date to submit applications is 31st August 2014.

The Centre has also announced the organisation of the 3rd International Workshop on 'Minerals Processing and Beneficiation' in Harare, Zimbabwe during 11-14 September 2014. Concerned scientists, engineers and professionals are earnestly invited to participate and share knowledge in this highly important subject. Last date for submission of applications is 11th August 2014.

The last date for sending applications for destination India 'Research Training Fellowship for Developing Country Scientists (RTF-DCS)' scheme is 14th July 2014.


(Arun P. Kulshreshtha)

Centre Organised

International Workshop on Perspectives on Science & Technology Diplomacy for Sustainable Development in NAM and Other Developing Countries Manesar (Haryana), India, 27-30 May 2014

Science as an instrument has often been used to attend to problems of mutual interest and build constructive bilateral, regional and multilateral partnerships between the nations in the areas of strategic relevance, technology transfer, intellectual property rights, trade and commerce etc. In international dealings among nations, science as a diplomatic tool helps in removing political barriers offering tangible benefits to the concerned parties. Science diplomacy aids in fostering international collaborations among scientists in nations, including the ones where official diplomatic relations might be limited or strained, by providing a platform for scientists to cooperate. The potential of science and technology is slowly gaining recognition and many developing countries have initiated actions in leveraging international cooperation for national needs and priorities through science diplomacy and making new investments in human resources and infrastructure to enhance their S&T capabilities.

The Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) had earlier organised an International Workshop on 'Science and Technology Diplomacy for Developing Countries' during 13-16 May 2012 in Tehran, Iran with participation of 18 countries and 16 Ambassadors and senior diplomats during its inaugural, which got concluded with the adoption of a Resolution having a number of significant recommendations for various countries and stakeholders. It also strongly urged to hold similar scientific programmes in other developing countries for strengthening and promoting the relations among various countries on science, technology and innovation.



Group Photo of the Inauguration of S&T Diplomacy Workshop, Manesar, India

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(Contd. from Page 1 - S&T Diplomacy Workshop, Manesar, India)

As a follow up, the NAM S&T Centre organised another **International Workshop on 'Perspectives on Science and Technology Diplomacy for Sustainable Development in NAM and Other Developing Countries'** at Manesar (Haryana) [near New Delhi], India during 27-30 May 2014 with partial financial support from the Department of Science and Technology (DST), Government of India.

In view of the new Government of India under formation and considering the problem associated with travelling to Manesar from Delhi, the Inaugural Session of the workshop was organised in the late afternoon of 27th May in Skype conferencing mode. Prof. Arun P. Kulshreshtha, Director and Executive Head, NAM S&T Centre introduced the Mentor and Vice President NAM S&T Centre, Prof. K. VijayRaghavan, FRS, Secretary to the Government of India, Department of Science & Technology, Ministry of Science and Technology on Skype with each individual foreign delegate, after which he presented a brief background about the workshop. Prof. VijayRaghavan mentioned that Science Diplomacy has been nurtured for extraordinary goals and is exemplified by institutions such as Abdus Salam International Centre for Theoretical Physics at Trieste, European Molecular Biology Laboratory at Heidelberg and European Centre for Nuclear Research, Geneva. He expressed satisfaction that such a large number of similarly placed developing countries were attending this event for sharing experience on knowledge. He assured that India will examine the unanimously adopted outcomes of this International Workshop and will be open to lead / follow / invest on Science Diplomacy as a collective enterprise. The Mentor and Vice-President, NAM S&T Centre also 'skype'-released two books published by the Centre respectively on Science Diplomacy and Intellectual Property Rights.

The Workshop was attended by 36 participants from 22 countries, including Afghanistan, Cambodia, Colombia, Egypt, Germany, India, Indonesia, Iran, Malaysia, Mauritius, Myanmar, Nepal, Nigeria, Pakistan, Sri Lanka, South Africa, Switzerland, Syria, Turkey, Venezuela, Zambia and Zimbabwe, of which 11 delegates were from the host country India.

The overseas participants were from Afghanistan [Mr. Abdul Haseeb Arabzai, Head, Policy & Poverty Analysis Department, General Directorate of Policy & Result based Monitoring, Ministry of Economy]; Cambodia [Dr. Chansopheak SEANG, Director, Graduate Programs, Institute of Technology of Cambodia, Phnom Penh]; Colombia [Mr. Gustavo Makanaky, Counsellor for Economic and Cooperation Issues, Embassy of Colombia to India]; Egypt [Dr. Ahmed Yehia Gad, Assistant Professor, Animal Production Department, Faculty of Agriculture, Cairo University, Giza]; Germany [Prof. Dr. Ittekkot Achuthan Venugopalan William, Professor, University of Bremen and Director (Retired), Centre for Tropical Marine Ecology (ZMT), Bremen]; Indonesia [Mr. Ophirtus Sumule, Director, S&T Provider and Regulation Network, Ministry of Research & Technology]; Iran [Dr. Ali Morteza Birang, Deputy of International Affairs, Vice Presidency for Science and Technology and Dr. Ali Azam Khosravi, Research Counselor, Science, Research & Technology, Embassy of the Islamic

Republic of Iran]; Malaysia [Mr. Siva Kumar Solay Rajah, Principal Assistant Secretary, Ministry of Science, Technology and Innovation (MOSTI)]; Mauritius [Mr. Deepak Prabhakar Gokulsing, Minister Counsellor / Deputy High Commissioner, Ministry of Foreign Affairs, Regional Integration and International Trade and Dr. M. Madhou, Research Coordinator, Mauritius Research Council, Ministry of Tertiary Education, Science, Research and Technology, Ebene]; Myanmar [Ms. Khin San Thu, Assistant Director, Ministry of Science and Technology]; Nepal [Dr. Chiranjivi Regmi, Chief Scientists and Chief, Planning Division, Nepal Academy of Science & Technology (NAST), Lalitpur]; Nigeria [Dr. Olugbemi Bolarinwa Olugbenga, Deputy Director / Head, Policy Analysis Division, Raw Materials Research & Development Council (RMRDC)]; Pakistan [Dr. Kamran Ali Qureshi, Federal Secretary, Ministry of Science and Technology]; South Africa [Mr Nkoni Thabiso Selby Modiba, Deputy Director, Multilateral Cooperation, Department of Science and Technology (DST)]; Sri Lanka [Ms. Himali Wathsala Kumari Athaudage, Director, Ministry of Technology and Research]; Switzerland [Dr. Balz Strasser, CEO, Swissnex India, Bengaluru, India]; Syria [Dr. Wael Deirki, Minister Counsellor, Syrian Embassy, New Delhi]; Turkey [Dr. Siir KILKIS, Scientific Programs Expert and Ms. Nesibe Yazici, Scientific Programs Policy Expert of TÜB TAK Science Technology and Innovation Policy Department]; Venezuela [Ms. Marianly Geraldine Tovar Mujica, International Analyst, Ministry of the Popular Power for Science, Technology and Innovation, PISO]; Zambia [Mr. Filipo Zulu, Acting Manager, Programme Development & Implementation, National Science Council, Lusaka]; and Zimbabwe [Mr. Johnsai Tandi Dewah, Director and Mr. C Mupeyiwa, Principal Science and Technology Officer in the Ministry of Higher and Tertiary Education, Science and Technology Development].

The Indian participants / speakers were Dr. Ashok Jain, Fellow National Academy of Sciences, India, Former Director, National Institute of Science Technology & Development Studies (NISTADS), New Delhi, and Vice President (Academic Development & Research), EMPI Business School; Dr. Dipankar Sarkar, CSIR-Emeritus Scientist, National Geophysical Research Institute (NGRI), Hyderabad; Dr. Anirban Basu, Scientist V, National Brain Research Centre (NBRI), Manesar, Haryana; Mr. Shaikh Emdadul Islam, Director, BITM, National Council of Science Museums, Kolkata; Dr. Raj Mehrotra, Project Coordinator, Kurukshetra Panorama & Science Centre, National Council of Science Museums, Kurukshetra; Mr. Anurag Kumar, Curator, National Science Centre, Delhi; Mrs. Sadhana Relia, Head, International Multilateral and Regional Cooperation Division (IMRCD), Department of Science & Technology (DST), Government of India; Dr. Rita Gupta, Scientist-E, IMRCD, DST; Dr. Ruckmani Arunachalam, Scientist-B, IMRCD, DST; and Ms. Radhika Tandon and Ms. Subhashree Basu of the NAM S&T Centre. From among the organisers of the workshop - NAM S&T Centre - Prof. Arun Kulshreshtha, Director and Executive Head; Mr. M. Bandyopadhyay, Senior Expert & Administrative Officer; and Mrs. Pinky Singh, Ms. Parul Sehgal and Ms. Shania Tahir, Research Assistants attended this event.



(Contd. from Page 2 - S&T Diplomacy Workshop, Manesar, India)



**Foreign Participants of
S&T Diplomacy Workshop, Manesar, India**

The overall programme of the Workshop was conducted in five Technical Sessions.

Technical Session I titled 'Science and Technology Diplomacy and Sustainable Development Goals (SDGs)' was held in three sub-sessions co-chaired by Mrs. Sadhana Relia (India) and Dr. Ali Birang (Iran); Mr. Kamran Ali Qureshi (Pakistan) and Dr. Dipankar Sarkar (India); and Dr. Venugopalan Ittekkot (Germany) and Mr. M. Bandyopadhyay (India).

Technical Session II titled 'Country Status Reports: S&T Diplomacy in Action' was held in two sub-sessions with the co-chairs as Dr. Chiranjivi Regmi (Nepal) and Dr. Anirban Basu (India); and Dr. Balz Strasser (Switzerland) and Dr. Ashok Jain (India).

Technical Session III titled 'Country Status Reports: Future Prospects and Challenges' was in two sub-sessions co-chaired by Mr. Johnsai Tandi Dewah (Zimbabwe) and Dr. Raj Mehrotra (India); and Mr. Deepak Prabhakar Gokulsing (Mauritius) and Mr. Shaikh Emdadul Islam (India).

Technical Session IV titled 'Science, Technology and Innovation Policy' was in two sub-sessions and was co-chaired by Mr. Nkoni Thabiso Selby Modiba (South Africa) and Mr. Anurag Kumar (India); and Ms. Marianly Geraldine Tovar Mujica (Venezuela) and Mr. Ophirtus Sumule (Indonesia).

Technical Session V titled International Partnerships in Science and Technology was chaired by Ms. Himali Wathsala Kumari Athaudage (Sri Lanka) and Mr. Abdul Haseeb Arabzai (Afghanistan).

Finally, the Concluding session was co-chaired by Dr. Olugbemi Bolarinwa Olugbenga (Nigeria) and Dr. Wael Deirki (Syria).

Prof. Dr. Ihsan Fathallah Rostum, Vice President, Fii Laser Society, Al-Muthanna University, Iraq could not join the

workshop till last minute wait as he became a victim of the terrorist bombing in his country and also lost his close relatives. The delegates expressed their condolence and spent a minute in silence to pray for peace and harmony in the world.

The presentations made by the foreign participants were on 'The Impact of Information and Communication Technology on Development and Achieving MDGs' by Mr. Abdul Haseeb Arabzai of Afghanistan; 'Science & Technology Diplomacy: Progress of the Engineering Education in Cambodia' by Dr. Chansopheak SEANG of Cambodia; Colombian STI Development Policies Summary by Mr. Gustavo Makanaky of Colombia; 'Science and Technology Diplomacy for Sustainable Development in Egypt' by Dr. Ahmed Yehia Gad of Egypt; 'Enhancing National Capabilities for achieving Sustainable Development Goals: Oceans and Seas and Developing Countries' by Prof. Dr. Ittekkot Achuthan Venugopalan William of Germany; 'Indonesian Policy on Development of Science and Technology' by Mr. Ophirtus Sumule of Indonesia; 'Science and Technology Diplomacy: Iran and the Path to Development' by Dr. Ali Morteza Birang of Iran; 'Leveraging on Science, Technology and Innovation (STI) Policy by Enhancing Collaborative Diplomacy' by Mr. Siva Kumar Solay Rajah of Malaysia; 'Perspectives on Science and Technology Diplomacy for Sustainable Development' by Mr. Deepak Prabhakar Gokulsing of Mauritius; 'S&T Diplomacy: Status and Opportunities for the Republic of Mauritius' by Dr. M. Madhou of Mauritius; 'Current Activities on upgrading Technological University under Ministry of Science and Technology' by Ms. Khin San Thu of Myanmar; 'Status of Science and Technology Diplomacy and Need for Capacity Building In Nepal' by Dr. Chiranjivi Regmi of Nepal; 'Nigeria's Technical Aid Corps Scheme: A Model for Science and Technology Diplomacy in Developing Countries' by Dr. Olugbemi Bolarinwa Olugbenga of Nigeria; 'Pakistan's International Linkages in Science and Technology' by Dr. Kamran Ali Quresh of Pakistan; 'Science and Technology



(Contd. from Page 3 - S&T Diplomacy Workshop, Manesar, India)



Cultural Exhibitions and S&T Diplomacy: Recent Initiatives by the National Council of Science Museums (NCSM), India' by Mr. Shaikh Emdadul Islam; 'Effective Science and Technology Diplomacy Tool For Inducing Phenomenal Growth of Science Centres' by Dr. Raj Mehrotra; 'Indian Science & Technology Heritage and S&T Diplomacy' by Mr. Anurag Kumar; 'Better Diplomacy and Better Science for Better Development - A Way Forward towards fulfilling Post-2015 Development Agenda' by Dr. Ruckmani Arunachalam, Dr. Rita Gupta and Mrs. Sadhana Relia; 'Science and Technology Diplomacy in the Area of Nanotechnology' by Ms. Radhika Tandon; and 'Science & Technology Diplomacy in India towards achieving MDG 7 – To ensure Environmental Sustainability' by Mr. M. Bandyopadhyay and Ms. Subhashree Basu.

In the Concluding Session Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre made a presentation on the NAM S&T Centre and its Role in South – South Cooperation in Science and Technology. He also contended that the diplomacy practiced by developed countries was essentially to meet their own needs and demands on cooperation in science, technology, innovation, trade etc. with other countries and regions. However, the diplomacy of the developing countries had more emphasis on negotiating their technology requirements with other countries to achieve their economic goals rather than on basic and fundamental sciences. In this context, Prof. Kulshreshtha suggested the use of a term *Sciplomacy* to encompass the entire gamut of Science, Technology and Innovation Diplomacy requirements of the developing countries.

Dr. Kamran Ali Qureshi, Federal Secretary, Ministry of Science and Technology of Pakistan in his concluding remarks mentioned that scientific thought and its creation is a common shared heritage of mankind and the role of technology innovation in economic growth brought international diplomacy in play. He observed that many nations are willing to give aid, but not technology transfer. He mentioned about the role of the Abdus Salaam International Centre for Theoretical Physics at Trieste which allows scientists across the world to work together. He further said that while many S&T Cooperation agreements are concluded and implemented, it is important that small, doable and achievable collaborative actions are initiated. Weak follow-up on S&T agreements is often attributed to factors such as financial constraints, capacity issue and lack of political will but Pakistan is active on several multilateral forums such as UNCSTD, UNCLOS, UNESCO and NAM S&T Centre. He congratulated the NAM S&T Centre for efficient coordination and giving shape to this International Science and Technology Diplomacy Workshop and the informal contacts with the practitioners of international S&T relations and policy planners participating in this Workshop have been of significant consequences. He also emphasised that while effectiveness of NAM at political front needs to be pushed, the scientific role -collaborative activities and diplomacy amongst NAM countries through the NAM S&T Centre is functioning well beyond boundaries despite financial constraints.

The delegates extensively deliberated and debated on finalising a document titled 'Manesar Declaration – 2014 on

Diplomacy in Sri Lanka' by Ms. Himali Wathsala Kumari Athaudage of Sri Lanka; 'Science and Technology Diplomacy for Sustainable Development: the South African Experience' by Mr Nkoni Thabiso Selby Modiba of South Africa; 'Switzerland's Approach to Foster Science & Diplomacy for Sustainable Development' Dr. Balz Strasser of Switzerland; 'Country Perspective on S&T Diplomacy: Syria' by Dr. Wael Deirki of Syria; 'The Turkish Vision for Science, Technology, and Innovation' by Dr. Siir Kilkis and Ms. Nesibe Yazici of Turkey; 'Diplomacy in Science and Technology as a Mechanism in Acquiring Technological Transfer: The Venezuelan Experience' by Ms. Marianly Geraldine Tovar Mujica of Venezuela; 'Zambian's S&T Policy' by Mr. Filipo Zulu of Zambia; 'TVET Perspectives on Sustainable Development in Developing Countries: Case for Zimbabwe' by Mr. Johnsai Tandi Dewah of Zimbabwe; and 'The Science and Technology Diplomacy Impact; Achievements, Opportunities and Challenges' by Mr. C. Mupeyiwa of Zimbabwe. The presentations of Dr. Bernard Zahuranec, Program Officer, Oceanic Biology (retired), US Office of Naval Research of USA on 'Perspectives in International Diplomacy in Science and Technology' and of Prof. Tahereh Miremedi, Head of Research Center for S&T Policy and Diplomacy, Iranian Research Organization for Science and Technology (IROST), Iran on 'Integrating S&T Policy and S&T Diplomacy: Designing a Hybrid Model', who could not attend the Workshop, were read in absentia respectively by Ms. Shania Tahir and Mrs. Pinky Singh of the NAM S&T Centre.

Nine papers presented by Indian participants were on 'Importance of Regional Cooperation in Earth Sciences with Special Reference to Earthquake Hazard Scenario in South Asia' by Dr. Dipankar Sarkar; 'Neglected Tropical Diseases in Conflict Zones' by Dr. Anirban Basu; 'The Role of S&T Diplomacy for Technology Sourcing, IPR Issues and Building S&T Partnerships' by Dr. Ashok Jain; 'Travelling Techno-



(Contd. from Page 4 - S&T Diplomacy Workshop, Manesar, India)



Group Photo of Participants of Manesar S&T Diplomacy Workshop near the premises of the NAM S&T Centre

Perspectives on Science & Technology Diplomacy for Sustainable Development in NAM and Other Developing Countries' with a set of recommendations, which was thereafter unanimously adopted by the participants. The part of this session was chaired by Dr. Ashok Jain (India) and other panellists were Mrs. Sadhana Relia (DST-India), Mr. Arabzai (Afghanistan), Dr. Ali Birang (Iran), Mr. Selby Modiba (South Africa), Ms. Marianly Tovar (Venezuela). The base paper for discussion was earlier prepared by Prof. Ittekkot (Germany), Dr. Zahuranec (USA), Prof. Miremadi (Iran), Mrs. Relia (DST-India) and Mr. Bandyopadhyay (NAM S&T Centre). The Final Recommendations in the Manesar Declaration was to establish a Centre for Science and Technology Diplomacy in a developing country to augment the institutional and human capacity in S&T Diplomacy for developing countries to achieve inclusive socio-economic development and their engagement in international discourse; to develop a framework for the adoption of S&T Diplomacy as a tool for engagement of NAM and other developing countries to develop and strengthen their

national S&T and innovation systems; to promote it as a distinct discipline by bringing out white papers, reports, policies and case studies, introducing postgraduate courses, research programmes and creating science diplomacy platforms for networking through North-South and South-South partnerships; and to establish appropriate fora to include science communication activities and heritage/indigenous knowledge relevant to S&T Diplomacy.

The Certificates for Participation were distributed to the participants and all those who were involved in the organisation of this excellent initiative by Mrs. Sadhana Relia, Head, IMRCD, DST, Government of India.

The Participants thanked the organisers for holding a highly successful event and for excellent hospitality and arrangements made for the delegates, and unanimously hoped that more similar events will be held in future with a focus on South-South cooperation for the development and successful implementation of S&T Diplomacies in developing countries.

Participation of Centre's Scientists in Workshops/Seminars/Conferences

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|-----------------------|---|
| 11 April 2014 | Ms. Radhika Tandon and Ms. Subhashree Basu , Research Assistants attended the Seminar on 'Post 2015 Development Agenda : An Indian Perspective' organised by the Research and Information Systems (RIS) at the India International Centre, New Delhi. |
| 27-30 May 2014 | Ms. Subhashree Basu , Research Assistant and Mr. M. Bandyopadhyay , Senior Expert attended the International Workshop on 'Perspectives on Science & Technology Diplomacy for Sustainable Development in NAM and other Developing Countries' organised by the NAM S&T Centre jointly with the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India at Manesar (Haryana), India and presented a joint paper on 'Science & Technology Diplomacy in India towards achieving MDG 7 – To ensure Environmental Sustainability'. |
| 27-30 May 2014 | Ms. Radhika Tandon , Research Assistant also attended the above International Workshop and presented a paper on 'Science and Technology Diplomacy in the Area of Nanotechnology'. |
| 27-30 May 2014 | Mrs. Pinky Singh , Ms. Parul Sehgal and Ms. Shania Tahir , Research Assistants also attended the above International Workshop and read scientific presentations of some global experts on Science and Technology on their behalf in their absence. |
| 12 June 2014 | Ms. Shania Tahir and Ms. Subhashree Basu , Research Assistants attended the Conference on 'Greening India's Growth - balancing Growth and Environmental Sustainability' organised by the Indian Council for Research on International Economic Relations (ICRIER) jointly with Global Green Growth Institute and World Bank at the India Habitat Centre, New Delhi. |



Manesar Declaration-2014

PERSPECTIVES ON SCIENCE & TECHNOLOGY DIPLOMACY FOR SUSTAINABLE DEVELOPMENT IN NAM AND OTHER DEVELOPING COUNTRIES

WHILE EXPRESSING GRATITUDE to the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) for hosting the International Workshop on 'Perspectives on Science and Technology Diplomacy for Sustainable Development in NAM and Other Developing Countries' at Manesar (Haryana), India during 27-30 May 2014 in partnership with the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India;

RECALLING the 16th NAM Summit Declaration in Tehran, the Islamic Republic of Iran adopted in August 2012 recognising the importance of South-South cooperation in Science & Technology; and

TAKING NOTE of the Declaration adopted by the International Workshop on 'Science and Technology Diplomacy for Developing Countries', jointly organized during 13-15 May 2012 by the NAM S&T Centre and the Centre for Innovation and Technology Cooperation (CITC)-Presidency of the Islamic Republic of Iran in Tehran; and

RECOGNISING that Science and Technology is a global asset with the potential to contribute to inclusive socio-economic development, and to reinforce security in its various manifestations, such as energy, water, food and health;

RECOGNISING also the role being played by the UN agencies, inter-governmental bodies and various international organisations on Science, Technology and Innovation in raising awareness about Science & Technology Diplomacy;

ACKNOWLEDGING the important role that Science & Technology Diplomacy can play in achieving the Millennium Development Goals (MDGs) and the post-2015 development agenda;

WE, THE PARTICIPANTS OF THE WORKSHOP, representing Afghanistan, Cambodia, Colombia, Egypt, Germany, India, Indonesia, Iran, Malaysia, Mauritius, Myanmar, Nepal, Nigeria, Pakistan, Sri Lanka, South Africa, Switzerland, Syria, Turkey, Venezuela, Zambia and Zimbabwe; and

HAVING DELIBERATED on the perspectives of Science & Technology Diplomacy in the context of developing countries;

UNANIMOUSLY recommend:

- Augmenting the institutional and human capacity in Science and Technology Diplomacy for developing countries to achieve inclusive socio-economic development and their engagement in international discourse.
- Developing a framework for the adoption of Science and Technology Diplomacy as a tool for engagement of NAM and other developing countries to develop and strengthen their national S&T and innovation systems.
- Promoting Science and Technology Diplomacy as a distinct discipline by bringing out white papers, reports, policies and case studies, introducing postgraduate courses, research programmes and creating science diplomacy platforms for networking through North-South and South-South partnerships.
- Establishing appropriate fora to include science communication activities and heritage/indigenous knowledge relevant to Science & Technology Diplomacy.
- Strengthening the practice of Science and Technology Diplomacy amongst developing countries by posting Science and Technology Attaches/ Counsellors in the respective foreign missions.
- Establishing a Centre for Science and Technology Diplomacy in a developing country with due consideration of the initiatives made in Science and Technology Diplomacy by NAM and other developing countries.

THUS, RESOLVED IN MANESAR (HARYANA), INDIA ON THIS DAY, 30th MAY 2014.

Distinguished Visitors To The Centre



April 15, 2014 H.E. Mr. Shaida Mohammad Abdali, Ambassador of Afghanistan in India, Embassy of the Islamic Republic of Afghanistan, New Delhi accompanied with Mr. Sayed Mujtaba Ahmadi, Economic Counselor and Mr. Zubair Juenda, Second Secretary, Information and Media.



SCIENCE AND TECHNOLOGY NEWS IN THE DEVELOPING WORLD

Bahrain: Launch of National Space Science Agency

Bahrain's National Space Science Agency held its inaugural meeting on 9th April 2014 to draft regulatory frameworks and determine next steps in its bid to advance the discipline in the kingdom. The agency's new board also discussed the possible ratification of international space-related agreements such as the Outer Space Treaty, the Rescue Agreement, the Space Liability Convention, the Registration Convention and the Moon Agreement. In February 2014, the King of Bahrain had issued a decree to establish a first-of-its-type national authority for aerospace sciences. The new agency seeks to establish sound infrastructure for the observation of outer space and the earth, make Bahrain a leader in space science and technology, build a culture and methodology of scientific research within the kingdom and encourage technical innovation, among other goals. The new agency is interested in satellites to obtain data, to use them for remote sensing and to conduct advanced space research, so it can be the engine for the state in the use of the latest satellite communication technologies. Experts believe that Bahrain can benefit from the experiences of states such as Algeria, UAE, Saudi Arabia, Qatar, India, Singapore, Pakistan, Japan and others having a long history in space science. Bahrain's capacity in this field is very modest at present and its development will require a long term strategy in order to bear fruit.

Source: Al-shorfa, 24th April 2014

Bolivia: World's Longest Cable Car System

There's no way a city like La Paz should be where La Paz is. At 3650 metres above sea level, the centre of Bolivia's de facto administrative capital lies trapped at the bottom of a sheer-sided canyon in the Andean altiplano. On the canyon's lip, 400 metres above, is the former suburb of El Alto - the 'high place' - now a million-strong metropolis in its own right and home to the highest international airport in the world. Previously the only practicable route for the 200,000 people passing between the two cities each day was a 15-kilometre detour by road via the head of the canyon, or a precipitous descent on foot down its sides past the makeshift brick houses of some of the cities' poorest inhabitants. Now a little relief is coming from the skies. The first of three cable car lines passing up the side of the canyon was given a public preview this week. Mi Teleferico opens to the public in May. The first couple has already gotten married in a gondola, and spokespeople for the system say it will be equipped with Wi-Fi. The big remaining question: How much is the fare? Today it costs 2.50 bolivianos (36 cents) to take the arduous bus ride between La Paz and El Alto. Commuters might be willing to pay a little bit more for the scenic, relaxing ride to work aboard this \$230 million transit system in the sky. When completed the entire system will be 11 kilometres long, the longest urban cable car system in the world, with each line capable of carrying 3000 people per hour in each direction.

Source: New Scientist, 10th April 2014

Brazil: Frozen Section Biopsy to Diagnose Bladder Cancer

Bladder cancer is the fourth leading cause of cancer in men and is second only to prostate cancer among the tumours affecting the urological system. Bladder tumours are usually very aggressive and cause early metastasis. The patient's prognosis can change drastically in less than three months if the treatment is not performed in a proper manner. A study conducted at the University of São Paulo School of Medicine (FMUSP) showed that the rapid result test known as a frozen section biopsy may become the most precise bladder cancer diagnostic test available and enable the early treatment of invasive lesions. The patients come to the hospital with the diagnosis of bladder tumor, but it is not known whether they had muscle-invasive tumours, which are the type that affect the organ's muscle layer. This determination is made using a procedure called transurethral resection, which removes the tumour and cauterizes the site with the aid of equipment connected to a camera inserted through the urethra. The collected material is then sent for pathological analysis, and the results are ready within approximately five days. If the lesion is determined to be superficial, which occurs in approximately 70% of the cases, that is the end of the surgical treatment. However, if the exam indicates that the tumour is muscle invasive, the bladder needs to be removed to prevent the spread of

the disease [metastasis]. To make a precise diagnosis, however, the surgeon needs to obtain a sample of the bladder's muscle layer during the resection procedure for analysis. When this does not occur, a new procedure has to be conducted, and the start of treatment is delayed for at least four more weeks. However, in performing frozen section biopsy the method consists of freezing the collected material using liquid nitrogen and then cutting the sample into thin slices for microscopic analysis. The pathologist's analysis is performed while the patient is still on the operating table, and the result is ready in approximately 15 to 20 minutes. If the results show that the resection was not adequately performed, the procedure can be redone immediately. According to the researcher, the frozen section procedure is already used routinely in two circumstances: during surgery, when it is needed to determine whether the tumour is benign or malignant (to guide the treatment options), and after removing the tumour, when it is needed to determine whether the surgical margin is free of lesions. Frozen section biopsy is a relatively inexpensive procedure and provides for earlier diagnosis and treatment of invasive lesions.

Source: Agência FAPESP, 9th April 2014

Brazil: Paper Sensors to Detect Explosives

The large-scale use of explosives by terrorist groups in recent years has led to the development of new commercial devices that are able to identify and quantify such explosives. However, the equipment that is currently available, such as electron capture detectors, mass spectrometers and X-ray readers, is highly sophisticated and expensive, and trained individuals are required to conduct the analyses. In addition, not all of the techniques are appropriate for detecting explosive peroxides, such as triacetone triperoxide (TATP) and hexamethylene triperoxide diamine (HMTD), whose use by terrorists has increased in recent years owing to the relative ease of their synthesis and of obtaining raw materials such as hydrogen peroxide, acids and acetone to create them. That is why electrochemical and chromatographic sensors (the latter based on the separation of mixtures and the identification of their components) are being developed to detect this type of explosive, which has gained notoriety after the London Underground attacks in 2005. But the problem is that most of these new sensors use chromatographic paper, which is more expensive than office paper. Researchers from the Chemistry Institute at the University of São Paulo (IQ/USP) have developed an electrochemical sensor (based on chemical reactions that produce energy) and a colorimetric sensor (based on the quantification of a substance through perception of its colour) out of office paper and filter paper (similar to that used for coffee), that are capable of detecting some of the explosives most often used in terrorist attacks. The idea of developing devices using office paper or other types of conventional printer paper came up because these materials are easy to find anywhere in the world and the goal of the project was to make the devices for detecting explosives and other chemical compounds less expensive, readily accessible and able to be used in remote locations, without the need of a laboratory infrastructure for analysis and trained people to use them. The researchers used a wax printer to print a series of individual, 1.6-cm-diameter white circles on office paper on which to place solutions or samples of material for analysis. The printed sheets are placed in a laboratory oven or thermal press for three minutes at a temperature of 120°C. The heating process causes the wax to melt, penetrating all layers of the paper and forming a hydrophobic (water-impermeable) barrier that allows the solution to penetrate and confine itself within the white circles that received no wax impression. By using a transparency that serves as a template, the researchers paint electrodes on the printed office sheet, using electrically conductive silver ink. After the ink dries, scissors are used to cut out each electrochemical cell, resulting in a disposable electrochemical device with three electrodes. When connected to a potentiostat (equipment used to apply an electrode potential and measure the electric current of the conductive solution), the electrochemical sensor made out of paper is able to detect the explosive, picric acid, and lead, which is a component of gunpowder residue. The idea is for these devices to have forensic and security applications for the detection of explosives, but they also have sensitivity to chloride ions and heavy metals, which also makes their use in environmental monitoring a possibility. To develop a colorimetric sensor that changes color when exposed to the explosives TATP, HMTD, 4-amino-2-nitrophenol (4A2P),



(Contd. from Page 7 - S&T News)

nitrobenzene and picric acid, the researchers placed small amounts of potassium iodide (KI), creatinine and aniline in the white circles – this time printed on filter paper. Upon contact with each of the five types of explosives, these chemical reagents produce a unique pattern of colours that varies according to the concentration of the compound. Each colour variation of the colorimetric sensor in response to different concentrations of the five explosives was captured and stored using a smartphone application, using mathematics to analyse the photograph – also taken by smartphone in a device the researchers call a 'stool pigeon' – of a colorimetric paper exposed to one of the five types of explosives and indicates which explosive and what amount of it is present in the sample, based on its colour pattern. The colorimetric sensor allows an airport security agent, for example, to pass the paper over a piece of luggage, then take a photo using a cell phone and get the results from a software analysis that indicates the presence of an explosive, on the order of 0.2 micrograms. The idea now is to make these applications viable and to enable the devices to be used for other purposes, such as detecting illegal drugs like cocaine, or to generate a cheaper alternative to the glucose test strips that are used to monitor blood glucose levels in patients suffering from diabetes.

Source: *Agência FAPESP News*, 5th May 2014

Caribbean: 'Protected Agriculture' - Regional Food Security Initiative by CDB

The Caribbean Region currently imports billions of US dollars in food, and Guyana, via the Jagdeo Initiative, is seeking to have regional states become more food secure through increased and sustained agricultural productivity. As the Caribbean moves towards increasing its food security, the Caribbean Development Bank (CDB), which views agriculture as vital to the prosperity of the Region, is promoting 'Protected Agriculture'. One generally likes to talk about agriculture in the context of rural development, as large segments of the populations live in the rural area. However, over the years, as the focus on agriculture has reduced in many countries, with some segueing into tourism and importing food to fill their needs, their local agricultural sectors have been declining. The CDB has recognised that many youths who comprise the bulk of the Region's populations, are no longer interested in back breaking labour which characterised the industry previously. They want to utilise that skill that they are learning in school with their science courses and what have you, to do a more modern agriculture. The move, described as 'Protected Agriculture', is now being focused on by the CDB which entails the use of green houses to grow specific crops which have a good domestic market and the possibility of being linked to the tourist industry with its emphasis on quality. The CDB is also focusing on irrigation, and in countries such as Jamaica, this move has helped to increase productivity in agriculture. Guyana is pushing to enhance the regional capacity for food security through agriculture, where large scale investments such as the Santa Fe mega farm in Region 9 will result in these goals being achieved through economies of scale. The efforts will be on seeking to ensure regional standards for food quality and easier transportation and accessibility to Caribbean markets, all of which will go to reducing the Region's dependability on food imports from beyond the Region.

Source: *CARDI Agriculture in the News*, 27th May 2014

India: Optical Sensor to diagnose and cure Jaundice

Researchers from S.N. Bose National Centre for Basic Sciences and Bose Institute in Kolkata, India have developed a novel optical fibre-based sensor that can detect and degrade bilirubin, a pigment that builds up abnormally in blood and tissues of jaundice-afflicted newborns and adults. The sensor, which works when placed on the skin or just beneath the outer skin, could be a helpful tool in diagnosing and treating jaundice among newborns. The device has been made by attaching a blue light-emitting diode to a single silica fibre and fitting the sensor with an optical power meter that can continuously detect and monitor the levels of bilirubin as it degrades under the blue light because bilirubin is known to absorb blue light. This creates a 'vanishing' field of tiny waves which detect and degrade bilirubin deposited on the surface of the silica fibre. The waves generated by the evanescent field of blue light strongly interact with the environment outside the silica fibre and carry spectroscopic information. The waves can penetrate few hundreds of nanometres into the surrounding

environment of the fibre. In studies using test bilirubin solution, the researchers found that spectroscopic signature of the photo-degradation product closely resembled methyl vinyl maleimide, a previously reported photo-oxidation product of bilirubin. After the degradation of bilirubin on the surface of the fibre, the evanescent field searches for new bilirubin molecules in the solution by increasing the depth of penetration. To find out whether the sensor could degrade bilirubin in a physiologically relevant environment, the researchers studied the photo-degradation of bilirubin in a mixture of human serum albumin and haemoglobin, the two major ingredients of human blood. Haemoglobin and bilirubin carry different spectroscopic signatures. Relying on this, they clearly detected photo-degradation of bilirubin without affecting the haemoglobin count in the mixture. To test the feasibility of using this sensor on the skin of jaundice-affected patients, they simulated the structure and composition of skin using wet-chromatography paper. The experiments using such paper showed the decrease of bilirubin levels in test solutions. Light has long been in use for medical diagnosis and treatment. In earlier studies, the researchers had explored the potential of zinc oxide nanoparticles in light-assisted treatment of jaundice. Various other studies are also investigating the prospect of using light to make sensing devices. However, no previous studies had demonstrated the efficacy of an 'evanescent field' for diagnosis and treatment of jaundice.

Source: *Nature India Update*, 23rd April 2014

India: Vitaminised Nanotubes ferry Anticancer Drug

Carbon nanotubes have high surface areas, excellent chemical stability and superior electronic properties. They can keep therapeutic molecules intact during transport in the body and deliver them to target cells more effectively and safely than traditional methods. Researchers at Dr. H.S. Gour Central University, Sagar and CSIR- Central Drug Research Institute (CDRI), Lucknow have synthesised a nanosized drug carrier from multiwalled carbon nanotubes, vitamin E and an organic compound. They loaded the drug carrier with doxorubicin and investigated its drug-delivery potential in cultured human breast cancer cells and tumour-bearing mice. They also compared the drug-delivery potential of this drug carrier with doxorubicin-loaded multiwalled carbon nanotubes and free doxorubicin solution and observed that this drug carrier is capable of delivering the anticancer drug doxorubicin to breast cancer cells. The vitamin-loaded carrier showed a significantly longer survival time than the anticancer-drug-loaded nanotubes and the free doxorubicin solution. The results also indicate that the drug-loaded surface-engineered nanotube formulations have a longer residence time and a more sustained release profile in the body than the free doxorubicin solution. The researchers say that vitamin-loaded nanotubes have a higher cancer-targeting potential in tumour-bearing mice than the free doxorubicin solution.

Source: *Nature India*, 7th April 2014

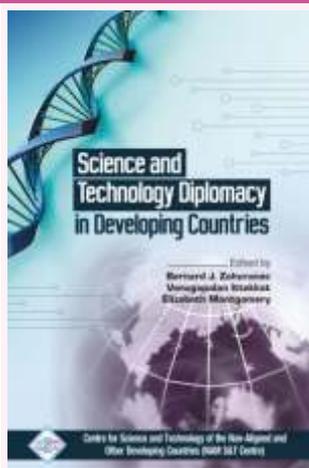
The Philippines: New Species of Metal-Eating Plant

Scientists from the University of the Philippines, Los Baños have discovered a new plant species with an unusual lifestyle — it eats nickel for a living — accumulating up to 18,000 ppm of the metal in its leaves without itself being poisoned. This amount is a hundred to a thousand times higher than in most other plants. The new species is called *Rinorea niccolifera*, reflecting its ability to absorb nickel in very high amounts and was discovered on the western part of Luzon Island in the Philippines, an area known for soils rich in heavy metals. Nickel hyperaccumulation is such a rare phenomenon with only about 0.5–1% of plant species native to nickel-rich soils having been recorded to exhibit the ability. Throughout the world, only about 450 species are known with this unusual trait, which is still a small proportion of the estimated 300,000 species of vascular plants. Hyperaccumulator plants have great potentials for the development of green technologies, for example, 'phytoremediation' and 'phytomining'. Phytoremediation refers to the use of hyperaccumulator plants to remove heavy metals in contaminated soils. Phytomining, on the other hand, is the use of hyperaccumulator plants to grow and harvest in order to recover commercially valuable metals in plant shoots from metal-rich sites.

Source: *Pensoft*, 9th May 2014

New Publication

Science and Technology Diplomacy in Developing Countries



The NAM S&T Centre has brought out its latest publication titled 'Science & Technology Diplomacy in Developing Countries', which has been edited by Dr. Bernard J. Zahuranec of USA, Prof. Venugopalan Ittekkot of Germany and Mrs. Elizabeth Montgomery of USA.

'Science & Technology Diplomacy' is a complex mix of Science & Technology and the diplomatic process, and good S&T diplomacy requires the integration of S&T and foreign policy communities to create a platform for these two groups to work together. The negotiators of most bilateral, multilateral or regional arrangements are therefore required to include the scientists, academicians, researchers, diplomats, government policy makers and non-governmental organisations, who all should have a deeper understanding of the nuances and implications of science and technology on commerce and trade as well as the political scenario of the countries and regions involved. Moreover, Science Diplomacy is the instrument of foreign policy and an indispensable tool of securing national interest.

The present book is a follow up of an International Workshop on 'Science and Technology Diplomacy for Developing Countries' organised by the NAM S&T Centre at Tehran, Iran during 13-16 May 2012 jointly

with the Centre for Innovation and Technology Cooperation (CITC) of the Presidency of the Islamic Republic of Iran, Tehran, Iran. The book includes 19 scientific papers and country status reports from 15 countries and is hoped to serve as a valuable reference material for the scientists and technologists, industry specialists and individuals who are interested in the fields of Science Diplomacy as a tool for developing international partnerships and collaborations, which in turn breaks the barrier among the nations and make a world a beautiful place to live in.

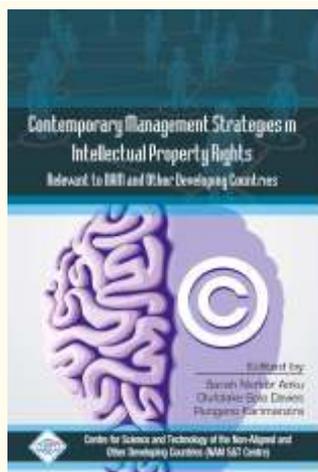
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New Publication

Contemporary Management Strategies in Intellectual Property Rights (IPR) relevant to NAM and Other Developing Countries



The NAM S&T Centre has brought out its latest publication titled "Contemporary Management Strategies in Intellectual Property Rights (IPR)" relevant to NAM and Other Developing Countries', which has been edited by Mrs. Sarah Norkor Anku of Ghana, Mrs. Olufolake Sola Davies of Nigeria and Ms. Rungano Karimanzira of Zimbabwe.

In a world, where the economic growth of nations is driven increasingly by the creativity and knowledge of their people, effective IP systems, which provide incentives for innovation and create structures for sharing the results, are key to unlocking this human potential. The Intellectual Property Rights (IPR) and the corresponding systems focusing on patent, trademark, copyrights, etc. have assumed a vital role in enhancing the socio-economic development and industrialisation, particularly in the developing countries. Most of these countries are in the process of building up or updating their IPR systems in line with the international norms and standards to compete in the international markets.

The present publication is a follow up of an international Advanced Training Course on 'Contemporary Management Strategies in Intellectual Property Rights (IPR) relevant to NAM and Other Developing Countries' organised by the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) at Manesar (Haryana), India during 16-20 July 2012 with sponsorship from the Department of Science and Technology (DST), Government of India.

The book includes 26 research papers and is hoped to serve as a valuable reference material for the scientists and technologists, industry specialists and individuals who are interested in the fields of various facets of IPR and its protection and issues.

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Centre Announces

THE CENTRE INVITES APPLICATIONS FOR RESEARCH TRAINING FELLOWSHIP FOR DEVELOPING COUNTRY SCIENTISTS (RTF-DCS) FOR 2014 - 15

The Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) is presently implementing a Fellowship scheme titled 'Research Training Fellowship for Developing Country Scientists (RTF-DCS)' to provide opportunity to young researchers of the developing countries for their capacity building in science and technology through their affiliation with premier academic and research institutions in India to carry out short-term research work for a period of six months in any field of Science, Technology and Engineering. The RTF-DCS Programme is sponsored by the Department of Science & Technology (DST), Government of India.

Under this scheme, twenty scientists and researchers from the developing countries (irrespective of whether a country is a member of the Centre or not) will be selected this year. Generally, only one Fellow will be selected from any particular country. Full financial support is provided to the research fellows for their international travel, subsistence allowance and domestic travel in India. The Centre provides return international airfare (by economy class and shortest route), a consolidated monthly Fellowship amount of INRs. 35000 (~US\$ 575 at current exchange rate) to meet accommodation, meals and other miscellaneous expenses, and a one-time grant of INRs. 15000 (~US\$ 250) for domestic travel (on actual cost basis) to the selected fellows.

In its third year of implementation of the RTF-DCS scheme, the NAM S&T Centre invites applications from the eligible researchers of the developing countries for the Fellowship for the financial year 2014-15 (1st April 2014 to 31st March 2015). The last date for submission of completed Application Form is Monday, **14th July 2014**.

Applications recommended by the parent institutions of the applicants may be submitted to the NAM S&T Centre through E-mail in the relevant format. Hard copies of the applications are not required. Guidelines for the Fellowship and the application form are available at the Centre's Website www.namstct.org.

For further details, please see the Website of the NAM S&T Centre: www.namstct.org.

THE CENTRE INVITES APPLICATIONS FOR NAM S&T CENTRE – DST (SOUTH AFRICA) TRAINING FELLOWSHIP ON MINERALS PROCESSING & BENEFICIATION (2015)

The Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre; www.namstct.org) has initiated a new Joint NAM S&T Centre – DST (South Africa) Training Fellowship on Minerals Processing & Beneficiation jointly with the Department of Science and Technology (DST), Government of South Africa [www.dst.gov.za] and is pleased to invite applications for the same for the year 2015. The Fellowship is aimed at providing opportunity to the scientists and technologists from the member countries of the NAM S&T Centre for affiliation with MINTEK, South Africa (www.mintek.co.za) for a period of three months to address the skills gap in the minerals beneficiation value chain and to get exposed to minerals processing technologies and undergo in-service training attached to the existing MINTEK programmes. This training programme will provide direct and indirect benefits to the Fellows from the member countries of the NAM S&T Centre and the host country, South Africa, through creation of networks and exposure to new developments in mineral processing and beneficiation.

Under this scheme, twenty Fellowships are available for the year 2015 each for a maximum duration of three months. The sending country or the candidates themselves will have to arrange for their international travel to and from South Africa. DST (South Africa) will provide a subsistence allowance @ of US\$300 per month, in South African Rand, for meals and out-of-pocket expenses in South Africa for the duration of the Fellowship. Accommodation will also be covered by the host country.

Applications are invited in the prescribed format for the Joint NAM S&T Centre – DST (South Africa) Training Fellowship. The last date for submitting completed Application Form for the Fellowship is Sunday, **31st August 2014**.

Applications recommended by the parent institutions of the interested scientists, technologists and engineers may be submitted in the relevant format by email directly to Mr. Selby Modiba / Ms. Palesa Motsoeneng of DST, South Africa at their email addresses Selby.Modiba@dst.gov.za; Palesa.Motsoeneng@dst.gov.za.

In matter of selection, the decision of DST, South Africa shall be final which will also send the Fellowship Award Letters to the selected applicants. Guidelines for the Fellowship and the application form are available at the Centre's Website www.namstct.org.

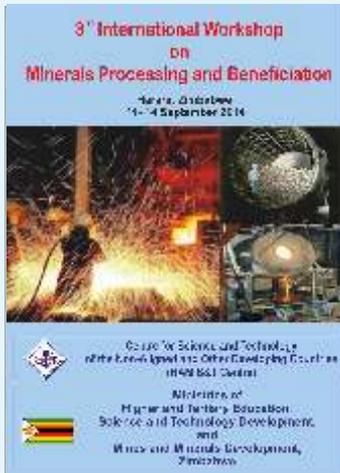
For further details, please see the Website of the NAM S&T Centre: www.namstct.org.



Centre Announces

3rd International Workshop on Minerals Processing and Beneficiation

Harare, Zimbabwe, 11-14 September 2014



Minerals are an essential component of the nation's material and economic base. The reason why mining and minerals hold such significance is because of the support it provides to the downstream industries which in fact hold key to the entire industrial development of a nation. There has been increasing concern in recent years about the ability of the countries with emerging economies to secure the financial resources necessary to bring non-fuel mineral deposits into production. Economic liberalisation has been taking place relaxing all possible hindrances to attract the much needed foreign investment for exploration and exploitation of mineral deposits. While the developing countries require much needed funds for this purpose, the developed world finds it cheaper to source the raw material from the developing nations where the labour and other costs are quite low. Therefore mining has provided mutual benefit to the industries located in every region of the world.

Historically the mining industry has been an important source of foreign exchange and tax revenue earnings, infrastructure creation and employment generation in developing countries. However over the last few decades it has been observed that with technological changes and cost cutting measures, the emphasis has shifted to

develop large scale mines to derive economy of scale. Developing countries will play an important role in that expansion on the demand side, as well as on the supply side, given shifts in exploration and mining development investments. In reality, however, the developing countries need help for exploitation of their resources for national development in view of the modern and innovative researches and technology advances, environment and sustainability consciousness, new world trade regime, etc.

For this reason, there is a need for policy makers, scientists, technologists, academics and other industry experts to come together and assess ways and means to realize the potential of the mineral resource base in developing countries and its contribution to industrial development.

In this context, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) had organised an International Workshop on 'Minerals Processing and Beneficiation' in Johannesburg, South Africa jointly with the Department of Science and Technology of South Africa in September 2012, which was followed by the adoption of a Johannesburg Resolution on Minerals Processing and Beneficiation. The NAM S&T Centre now announces the organisation of the **3rd International Workshop on 'Minerals Processing and Beneficiation'** in Harare, Zimbabwe from 11 to 14 September 2014. The workshop will be jointly hosted by the Ministries of Mines and Mining Development, and Higher & Tertiary Education, Science and Technology Development of the Republic of Zimbabwe.

The Workshop is primarily designed for researchers, technologists, industry representatives, minerals and mining practitioners, government officials, policy makers and NGOs from member states of the NAM S&T Centre, as well as other developing countries engaged in activities related to mineral processing and beneficiation. The Workshop will provide a platform for the participants to deliberate on various aspects of mineral processing and beneficiation with the objectives of identifying international best practices and policies for developing countries to address challenges in mineral processing and beneficiation; exchange of continental approaches to Mining and Mining processes; exchanging country specific information regarding mineral policies, resources and production; implementation of mining plans for adoption of proper mining methods and optimum utilization of minerals, safety and health of human resources; existing conditions of trade and technology flows amongst developing nations, impact of regionalisation and prospects for production, trade and technical cooperation; etc.

Completed Nomination Forms may be submitted directly to the NAM S&T Centre as early as possible, but latest by Monday, **11th August 2014**.

For further details, please see the Website of the NAM S&T Centre: www.namstct.org.

EDITORS: Mr. M. Bandyopadhyay ❖ ASSISTANT EDITORS: Ms. Radhika Tandon, Mrs. Pinky Singh, Ms. Parul Sehgal, Ms. Subhashree Basu and Ms. Shania Tahir

COMPILATION & DESIGN: Mr. Pankaj Buttan ❖ PUBLISHED BY: Prof. Arun P. Kulshreshtha, Director, Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), Core 6A, 2nd Floor, India Habitat Centre, Lodhi Road, New Delhi-110003 (India)

Ph: +91-11-24645134, 24644974, Fax: +91-11-24644973 E-mail: namstcentre@gmail.com, namstct@bol.net.in ❖ Website: <http://www.namstct.org>

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