

**INTERNATIONAL SYMPOSIUM ON LIGHTNING PROTECTION**

**KATHMANDU, NEPAL,**

**12–14 OCTOBER 2011**

***PARTICIPATING COUNTRIES:***      *18 Developing Countries (Including 15 Member Countries, 3 Non Member Country of the NAM S&T Centre)*

***NUMBER OF PARTICIPANTS:***      *The Workshop was attended by 23 overseas participants including 5 participants from the host country and 31 scientific papers were presented in five Technical Sessions.*

Lightning is a most dramatic and most common natural activity that occurs in the atmosphere. Lightning strikes may cause severe damage to physical structures and claim human and animal lives. It may ignite fires that may bring an entire structure down to ashes or create cracks, and at a lower degree of damage, it may destroy electrical, electronic and communication equipment beyond repair. Transmission and communication towers, transmission lines and tall physical structures including residential houses and monuments are more vulnerable to lightning activities. However one of the most significant losses that it may cause as far as the industries are concerned is the downtime. A couple of hours of standstill of normal operation or a loss of some important data stored in a computer may cause a company a huge economic loss. Thus there is an urgent need to launch national and international level programmes in the non-aligned and other developing countries as well as in developed countries to create awareness among masses and educate the engineering, technical, scientific and civil communities on the subject of lightning safety and protection.

In order to deliberate on lightning science and its engineering and protection related aspects the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) jointly with the Ministry of Science and Technology (MOST), Government of Nepal and the Nepal Academy of Science and Technology (NAST), Nepal Physical Society (NPS), Central Department of Physics (CDP) of Tribhuvan University and REHDON College organised a 3-day International Symposium

on Lightning Protection at Dhulikhel Lodge Resort, Kathmandu, Nepal during 12–14 October 2011.

In the Inaugural Session Prof. Devi Dutta Paudyal, Chairman, Organising Committee welcomed the delegates. The Inaugural Ceremony was opened in Nepalese traditional way by lighting of the oil lamp by the Chief Guest H.E. Mr. Lekh Raj Bhatta, Honourable Minister of Commerce and Supplies (formerly, Minister of Science and Technology) of Nepal. Prof. Arun P. Kulshreshtha, Director & Executive Head, NAM S&T Centre presented the genesis of the event and also briefly described the activities of the Centre. This was followed by a brief talk by Dr. Chandima Gomes, Faculty of Engineering, Universiti Putra Malaysia (UPM), Selangur, Malaysia about the Symposium. After the address by the Guest of Honour, Mr. Tana Gautam, Secretary, Ministry of Science and Technology, Nepal the Honourable Minister Mr. Lekh Raj Bhatta gave the Inaugural Address. The session was concluded with the Vote of Thanks by Prof. Shekhar Gurung, President, Nepal Physical Society followed by the Concluding Remarks of Prof. Surendra Raj Kafle, Chairperson of the Inaugural Session and Vice Chancellor, Nepal Academy of Science and Technology (NAST).

18 countries, namely, Bangladesh, Cambodia, Croatia, India, Indonesia, Kenya, Malaysia, Mauritius, Myanmar, Nigeria, Pakistan, Sri Lanka, Sweden, Togo, Uganda, USA, Zambia and the host country Nepal participated in this Symposium. The overseas participants were from Bangladesh [Mr. Munir Ahmed, Executive Director, TARA, Dhaka and Mr. Abidur Rahaman, Research Scholar, Dept. of Applied Physics, University of Dhaka], Cambodia [Mr. Leng Sovannarith, Lecturer, Electricity and Energy Department, Institute of Technology of Cambodia (ITC)], Croatia [Dr. Branko Grisogono, Department of Geophysics, Faculty of Science, University of Zagreb], India [Prof. Dr. Ravindra Arora, Ansal Institute of Technology; Gurgaon; Dr. Joy Thomas Meledath, Assistant Professor, High Voltage Laboratory, Indian Institute of Science (IISc), Bangalore; and Ms. Isha Parmar, Project Executive, Philanthrope, New Delhi], Indonesia [Ms. Evy Rosa, Staff, Division of Geophysical Potential and Time Signal, Agency of Meteorology, Climatology and Geophysics (BMKG), Jakarta], Kenya [Ms. Akinyi Margareta Ocholla, Principal Research Officer, Ministry of Higher Education, Science and Technology, Nairobi], Malaysia [Mr. Mazly Bin Mohamed, Meteorological

Officer and Head of TDR Unit, Malaysian Meteorological Department, Kuala Lumpur], Mauritius [Prof. Harry Coomar Shumsher Rughooputh, University of Mauritius], Myanmar [Ms. El El Cho, Lecturer, Electrical Power Engineering Department, Technological University (Taunggyi)], Nigeria [Mr. Gaji Muhammed Musa, Senior Scientific Officer, Energy Commission of Nigeria, Abuja], Pakistan [Mr. Ahmad Waqas, Lecturer, COMSATS Institute of Information Technology, Islamabad], Sri Lanka [Mr. Nuwan Kumarasinghe, Electronics Engineer, Department of Meteorology, Colombo; Mrs. H. K. W. I. Jayawardena, Research Scholar, University of Colombo; and Dr. Chandima Gomes, Currently Associate Professor, Universiti Putra Malaysia; Selangur], Sweden [Prof. Leif Enger, International Science Programme (ISP), University of Uppsala], Togo [Mr. Afanou N’Boueke, Engineer In-Charge of Studies, Ministry of Mines and Energy, Lomé], Uganda [Mr. Richard Tushemereirwe, Senior Private Secretary, Statehouse], USA [Prof. Mary Ann Cooper, Professor Emeritus, University of Illinois and Prof. Vladimir A. Rakov, Co-Director of the International Center for Lightning Research & Testing (ICLRT), Department of Electrical and Computer Engineering, Gainesville, University of Florida] and Zambia [Mrs. Lubasi Foster Chileshe, Head, Materials Engineering and Technical Services, National Institute for Scientific and Industrial Research, Lusaka]. From the NAM S&T Centre, Prof. Arun P. Kulshreshtha, Director & Executive Head and Mr. Yasir Abbas Rizvi, Research Assistant attended the event.

The overall programme of the Symposium was conducted at the premises of the MOST and NAST in five technical sessions, respectively co-chaired by (1) Prof. Branko Grisogono of Croatia and Dr. Narayan Adhikari, Tribhuvan University Central Department of Physics, Kirtipur, Kathmandu; Nepal; (2) Prof. Leif Enger of Sweden and Dr. Rajendra Parajuli, Amrit Science College, Tribhuvan University, Lainchaur, Kathmandu, Nepal; (3) Prof. Shekhar Gurung, President, Nepal Physical Society, Nepal and Prof. Ravindra Arora of India; (4) Prof. Lok Narayan Jha, Head, Central Department of Physics, Tribhuvan University, Kathmandu, Nepal and Dr. Ms. Leela Pradhan Joshi, Assistant Professor, Physics Department, Amrit Science Campus, Tribhuvan University, Kathmandu, Nepal; and (5) Prof. Mary Ann Cooper of USA and Mrs. Ravee Lakshmi

Chitrakar, Physics Department, Amrit Science Campus, Tribhuvan University, Kathmandu, Nepal.

26 scientific papers presented during the Symposium by the foreign participants were on 'Status of Lightning Accidents and Awareness in South East Asia' by Dr. Munir Ahmed of Bangladesh; 'Lightning Protection Practice in Bangladesh: An Overview' by Mr. Abidur Rahaman of Bangladesh; 'Mountain Meteorology' by Prof. Branko Grisogono of Croatia; 'Development of Streamer and Leader' by Prof. Ravindra Arora of India; 'Lightning Protection of Airborne Systems' by Dr. Joy Thomas of India; 'Lightning Protection in India' by Ms. Isha Parmar of India; 'Lightning Monitoring Activity in Indonesia' by Ms. Evy Rosa of Indonesia; 'Lightning Protection In Kenya – A Country Status Report' by Ms. Akinyi Margareta Ocholla of Kenya; 'Lightning in Peninsular Malaysia' by Mr. Mazly Bin Mohamed of Malaysia; 'Lightning Protection of Power Systems' by Prof. Harry Coomar Shumsher Rughooputh of Mauritius; 'Lightning Protection In Myanmar – A Country Status Report' by Ms. El El Cho of Myanmar; 'Basic Primer in Lightning Effects for Developing A Consumer – Oriented Guide on Surge Protection' by Mr. Gaji Muhammed Musa of Nigeria; 'Frequency Distribution of Thunderstorms in Pakistan' by Mr. Ahmad Waqas of Pakistan; 'Frontiers of Lightning Protection' and 'Protection of LV Systems' by Dr. Chandima Gomes of Sri Lanka; 'The Effect of Mountain Wake Vorticity on Lightning Occurrence in Sri Lanka' by Mrs. H. K. W. I. Jayawardena of Sri Lanka; 'Community based Low Cost Lightning Protection System' by Mr. Nuwan Kumarasinghe of Sri Lanka; 'The Importance of Modelling for Resolving Some Atmospheric Processes' by Prof. Leif Enger of Sweden; 'Lightning Protection for Facilities' by Mr. Afanou N'Boueke of Togo; 'Uganda Country Report – Lightning' by Mr. Richard Tushemereirwe of Uganda; 'Fundamentals of Lightning', 'Lightning Electric and Magnetic Fields and Protection of Structures' by Prof. Vladimir A. Rakov of USA; 'Lightning Safety Campaigns - USA Experience' and 'Medical Aspects of Lightning related Events' by Prof. Mary Ann Cooper of USA; and 'Lightning Protection in Zambia' by Mrs. Lubasi Foster Chileshe of Zambia;

5 scientific papers presented by Nepalese scientists were on 'Status of Lightning Research in Nepal' by Dr. Shriram Sharma, Department of Physics, Amrit Science College, Tribhuvan University / REHDON College, Samakhushi, Kathmandu; 'Variation

of Lightning Activity with Temperature’ by Mr. Raju Ghimire, Patan Multiple Campus, Tribhuvan University, Lalitpur; ‘Trends of Lightning in Nepal’ by Mr. Surendra Bhatta, Patan Multiple Campus, Tribhuvan University, Lalitpur; ‘Radio Lightning in Nepal’ by Mr. Rabi K.C.; Association of Community Radio Broadcasters, Lalitpur; and Ensuring Safety of Installation from Lightning Discharges by Mr. Bhesh R. Kanel, Chairman, Nepal Telecommunication Authority, Tripureshwor, Kathmandu.

At the end of the Technical Sessions, Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre made a presentation on ‘The Role of the NAM S&T Centre for South – South Cooperation in Science & Technology’. Subsequently, there was considerable deliberation and debate on generating a set of recommendations titled ‘Kathmandu Resolution on Lightning Safety and Protection’, which was adopted during the Closing Session. The Symposium ended with the handing over of the Participation and Sponsorship Certificates to the participants and sponsors of the Symposium and concluding remarks of the Chairman and members of the Organising Committee and Vice-Chancellor of NAST.

The participants thanked the organisers for the successful and fruitful organisation of the Symposium 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.