HEMCE-2009

The Seventh International High Energy Materials Conference & Exhibit (HEMCE-2009) organised by High Energy Materials Research Laboratory (HEMRL), Pune under the auspices of High Energy Materials Society of India (HEMSI) was inaugurated by Padma Shree Dr VK Saraswat, Scientific Advisor to *Raksha Mantri* & Secretary, Department of Defence R&D and DG R&D on 9 December 2009.

Dr Saraswat, in his inaugural speech stressed upon the need for miniaturization of rocket motors and warheads by innovative application of high energy materials to meet the requirements of ambitious Defence programmes. He also stressed upon production with high degree of quality control as well as packaging and systems integration. He mentioned that the futuristic HEMs like Octanitro Cubane and Polynitrogens need to be realised. He stressed the need for realization of insensitive munitions and thermobaric warheads. He added that R&D on nano-energetic materials is of great relevance. He also sensitized the delegates on the need to pay attention to the development of eco-friendly propellants. He underlined the need to identify non-polluting high speed propellants that have become very essential in view of the graduation from ramjet to scramjet technologies for applications like trans-atmospheric travel. Lastly, congratulating HEMRL for the path breaking research carried out by the laboratory in the field of HEMs in the last two decades he appealed to the HEM community to come out with contemporary and world class missiles and warheads.

Dr S Sivaram, Director, National Chemical Laboratory, Pune, the Guest of Honour, in his address brought out the changing definition of the 'enemy' and warned that the enemy can be our own neighbour. In this scenario, there is a need for a different strategy as well as different technologies and tools to protect ourselves. In view of their fast diffusion in society, we need to bring in technologies that cannot be duplicated and manufactured easily. He also stressed the need of countering low intensity conflicts.

Speaking on this occasion, Shri S Sundaresh, Distinguished Scientist and Chief Controller R&D (Armaments & Combat Engineering) said that there has been a phenomenal growth in research of HEMs in terms

of high burn rates and energetics. He also dwelt on new technologies such as laser assisted ignition, processing and IED detection technologies. He raised the issues of safety and green technologies for HEMs. He lauded the role of HEMSI in popularizing the developments in these areas.

Earlier Dr A Subhananda Rao, Chairman, Organizing Committee, HEMCE-2009, welcomed the guests and delegates. In his welcome address, Dr Rao summarized significant developments in the field of high energy materials all over the globe. HEMRL has made considerable progress in the area of HEMs and their scale-up. In the area of gun propellants, HEMRL-developed technologies have been transferred to Ordnance Factories to provide fire power for field guns and tank ammunition. He also said that synthesis of high density energetic materials with economical cost for the applications in explosives and propellants is the need of the hour. He talked about Explosive Detection kit that is developed by HEMRL, which is being used by Police, BSF & Army and has found use in post-explosion scenario and analysis of suspicious objects/materials. A lot of interest is shown by Indian and foreign industries to productionize it. Dr Rao introduced the Chief Guest Dr VK Saraswat and his major contributions in the country's missile development programme as well as the Ballistic Missile Defence initiative. He also introduced the Guest of Honor, Dr S Sivaram, his contributions in the area of chemistry, particularly Polymers, as also about the path-breaking contributions of Shri Sundaresh, leading to the design & development of battle tank technology in India.

Dr SN Asthana, Vice Chairman, HEMCE-2009, during his speech briefed about the paradigm shift in the focus of research from powerful to insensitive explosives. He brought out that deliberations during the Conference will provide critical inputs for future programmes in the area of HEMs for application in defence and space missions. He also briefed about HEMCE-2009 and that more than 500 delegates from DRDO, ISRO, DGOF, academic institutions, private and public sectors are participating in the event with more than 25 renowned high energy materials experts from countries like US, UK, Russia, France, Israel etc. are attending the Conference.

Ten Plenary Lectures were delivered during the 3-day Conference. The major topics covered were IM

A view of the HEMCE - 2009; Sitting (from L to R) Dr A Subhananda Rao, Dr VK Saraswat, Dr Suranjan Pal and Dr SN Asthana

Contd. on page10

Contd. from page 7

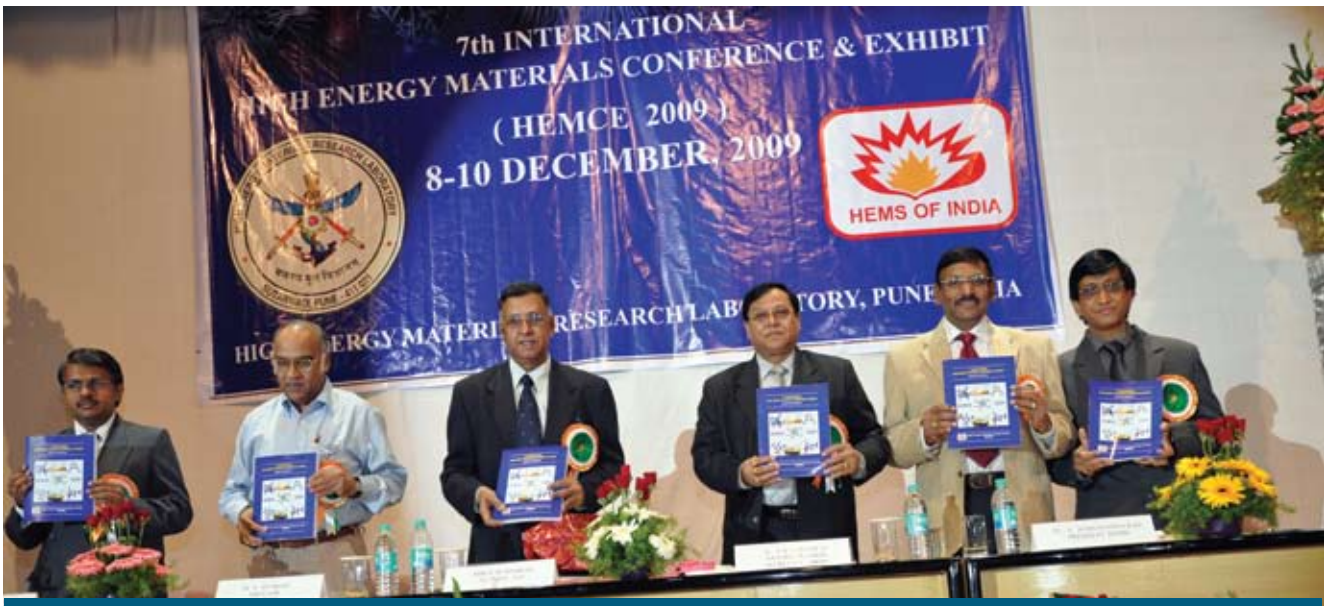
explosives, advancements in science and technology of hems, detection technologies of hems, propellants, pyrotechnic smoke, civil explosives etc. The talks were delivered by renowned experts from ARDEC, USA; TECHNION, Israel; TOMSK, Russia; DSTL, UK; and ISRO, IISc and DRDO, India.

More than 100 technical papers and nearly 150 poster presentations were made in the Conference covering topics like rocket and gun propellants, high explosives, pyrotechnics, synthesis/characterization of hems, nano-energetics, modeling and simulation, quality assurance & mechanistic aspects, detection of explosives and safety, hazards and environment. About 25 industries showcased their products in an exhibition organized concurrently.

Dr VK Saraswat, SA to RM lighting the lamp

On this occasion Dr A Subhananda Rao, DS, Director, HEMRL and Shri B Bhattacharya, Associate Director, were conferred Honorary Professorship of Rocket Motors Chair by Altai State Technical University, Russia; and five eminent scientists, two from India —Shri PG Shrotri and Dr KN Ninan, and three from abroad—Dr C Rao Surapaneni, USA: Mr Moshe Gill, Israel and Dr G Tolmachev, Russia, were honoured by conferring on them the Honorary Fellowship of the Society for their outstanding contributions in the field of HEMs. Prof SR Chakravarty, IIT, Chennai and Dr AK Sikder, Scientist 'F', HEMRL, Pune were awarded the Dalmia-ACRHEM-HEMSI Awards instituted by Dalmia Group of Industries under the auspices of HEMSI (with participation of ACRHEM this year) for their significant contributions in the field of HEMs. To commemorate the centenary year of HEMRL, the HEMRL Centenary Award was conferred on Dr Radhakrishnan Nair, Sci G, Vikram Sarabhai Space Centre, Thiruvananthapuram, for his significant contributions towards indigenous development of HTPB binders and solid propellants for ISRO missions.

The Conference concluded with Panel Discussion with Prof LM Patnaik, Vice-Chancellor, Defence Institute if Advanced Studies, Pune as Chairman and distinguished guests/speakers from abroad and India as Panelists.



Book release at HEMCE - 2009