

# DRDO NEWSLETTER

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*Hon'ble Raksha Mantri at NSTL, Visakhapatnam*



**Shri CD Malleswar, OS and Director, Naval Science and Technological Laboratory explaining Fire Control System (top) and Silver Oxide-Zinc Secondary Battery Cell technology to Raksha Mantri Shri Manohar Parrikar**



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Cover: Shri Manohar Pamkar, Hon'ble Raksha Mantri, handing over Expendable Decoy of Advanced Torpedo Defence System Maareecho to Admiral RK Dhowan, Chief of the Naval Staff. Dr S Christopher, Secretary, Department of Defence R&D and DG DRDO was present on the occasion.

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## Raksha Mantri dedicates Seakeeping and Manoeuvring Basin to the Nation



Hon'ble Raksha Mantri, Shri Manohar Parrikar dedicated the Seakeeping and Manoeuvring Basin (SMB) to the nation during a function held at Naval Science and Technological Laboratory (NSTL), Visakhapatnam, on 14 November 2015. Admiral RK Dhowan, PVSM, AVSM, YSM, ADC, Chief of Naval Staff and Dr S Christopher, Secretary, Department of Defence R&D and DG DRDO were present on the occasion. Shri Parrikar also handed over the Advanced Torpedo Defence System 'Maareech' to the Indian Navy.

SMB facility is set-up as a joint effort of DRDO and Indian Navy, which put India among the few nations in the world having the capability to undertake comprehensive hydrodynamic

model testing of naval platforms and weapon systems. SMB would help to design and build state-of-the-art naval combatants such as submarines, ships, torpedoes, etc.

Maareech, a joint project of Naval Physical and Oceanographic Laboratory (NPOL), Kochi and NSTL,

Visakhapatnam, is a state-of-the-art indigenous system for torpedo detection and countermeasures. The system offers a complete solution to detect and locate the incoming torpedo and apply countermeasures to protect naval platform against torpedo attack. Two production grade Maareech systems have been developed and their user evaluation trials completed onboard two Indian Navy ships.

Complementing the vital role of DRDO towards self-



Expendable Decoys of Maareech Torpedo System



reliance, Shri Parrikar said, "Development of Maareech is an excellent model of synergy between DRDO, Navy, public and private industries, demonstrating yet another milestone in Make In India efforts."

Raksha Mantri also gave away Awards to DRDO scientists for the year 2013 for their significant contributions and achievements.

The function was attended by Dr K Hari Babu, Hon'ble MP and Shri P Vishnu Kumar Raju, Hon'ble MLA and the large number of officers of the DRDO, Armed Forces, members of the academia, civil administration and distinguished invitees.

## Dr Christopher inaugurates Vertical Planetary Mixer at ACEM

Dr S Christopher, Secretary, Department of Defence R&D and DG DRDO, inaugurated the largest Vertical Planetary Mixer (VPM) of 3000 litre capacity in Advanced Centre for Energetic Materials (ACEM), Nasik, on 26 October 2015. Speaking on the occasion, Dr Christopher congratulated the team ACEM for the achievement in self-reliance and urged to gear up for future challenges.

The mixer, built by Central Manufacturing Technology Institute (CMTI), Bengaluru, is first of its kind in the country and is equipped with three agitators made of CF8 steel with helical flute design. A heavy-duty flame-proof electrical motor of 80 kW with VFD drive rotates the agitators in controlled axial and planetary motions that can mix propellant slurries of high viscosity (up to 1,00,000 Poise) in change-can bowls. Safety mechanisms for protection of overload, over-current and bowl overpressure and over-torque are included in the design. A PLC-SCADA-based automation with redundant HMI ensures remote operation of the VPM. The indigenously designed and manufactured mixer will facilitate solid propellant processing for large boosters.



Dr Christopher inaugurating Vertical Planetary Mixer



Vertical Planetary Mixer

Shri PK Mehta, OS and General Manager, ACEM, briefed Dr Christopher about the site plan and the activities being carried out at ACEM. DG DRDO also inspected other important facilities like Nitramine Grinding and Spheroidisation Plant (NGSP), Air Classifying Mill (ACM) for oxidizer, Rocket Motor Hardware preparation, Propellant Casting and Curing Facility and MAGNDT. Shri SC Bhattacharyya, Sc G, and other scientists of ACEM explained various operations involved in the processing of composite solid propellant and their criticality.

Shri AM Datar, DS and DG (ACE) and Dr Satish Kumar, DS and DG (MSS), were also present on the occasion.

## Raising Day Celebrations

### Advanced Systems Laboratory

Advanced Systems Laboratory (ASL), Hyderabad celebrated its 14<sup>th</sup> Annual Day on 5 October 2015. Dr Satish Kumar, DS and DG (MSS), was the Chief Guest and Prof. VS Rao, Acting Vice Chancellor, BITS Pilani was the Guest of Honour on the occasion. Smt Usha P Verma, Sc G, Chairman, Organising Committee welcomed the august gathering and briefed about the various event organised to mark the occasion. Shri Arun Kumar Sc G, ASL, presented Annual Report of ASL. Dr Tessy Thomas, OS and Director, ASL, in her inaugural address highlighted various achievements and future programmes of ASL and said, "An era of scientific innovations is awaiting us. ASL should be the prime centre for innovations of critical and strategic technologies for our country."

Prof. VS Rao congratulated ASL fraternity on the occasion and emphasized on better collaboration among universities, industries and R&D laboratories. Dr Satish Kumar appreciated the work done at ASL. He stressed on improvement of manufacturing capabilities and draw the futuristic programmes for next generation.

Laboratory-level DRDO Awards and mementos to personnel who completed 20, 25 and 30 years of services were presented by the Chief Guest and the

Guest of Honour. Merit and Welfare scholarships were also given to children of ASL employees. A cultural programme was organised by the employees on the occasion. Shri AK Singh, Sc F, proposed the vote of thanks.

### Defence Institute of Physiology & Allied Sciences

Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi, celebrated its 54<sup>th</sup> Raising Day on 12 October 2015. Dr Manas K Mandal, DS and DG (LS), DRDO, was the Chief Guest on the occasion. Lt. Gen Velu Nair, AVSM, VSM, DCIDS (Med and Col Commandant) was the Guest of Honour. Dr Shashi Bala Singh, OS and Director, DIPAS, welcomed the guests and gave a brief account of the achievements of the Institute during 2015. Lt Gen Velu Nair delivered a lecture on "Plot behind the Clot". He spoke about the issues involved in thromboembolic disorders at high altitude.

Dr Manas K Mandal appreciated the efforts being made by DIPAS scientists towards improving performance of soldiers under extreme environmental conditions especially high altitude. Various laboratory-level DRDO Awards were distributed to DRDS, DRTC and Admin and Allied category personnel. Sports



Dr Tessy Thomas inaugurating the Annual Day of ASL



Lt Gen Velu Nair inaugurating the Annual Day of DIPAS



and cultural events were organised to celebrate the occasion. A large number of former DIPASians attended the function.

## Defence Metallurgical Research Laboratory

Defence Metallurgical Research Laboratory, (DMRL), Hyderabad, celebrated its 52<sup>nd</sup> Annual Day on 16 October 2015. As a part of the event, a special lecture by Prof. Arun Tiwari, Adjunct Professor, School of Management Services, University of Hyderabad, was organised on 12 October 2015. Prof. Tiwari delivered a talk on Purpose of Life: As Learnt from Dr APJ Abdul Kalam to a packed audience. To mark the occasion, a series of cultural programmes were conducted.

The main event was held on 16 October 2015. Shri Deepak Kumar Gupta, Sc F, and Chairman, Steering Committee, welcomed the audience. Shri Kailash Kachhap, Secretary, Works Committee presented a brief report on the activities of Works Committee during the year 2015 followed by Shri MS Rao, General Secretary, DEFMETLAB Workers National Union. In his annual day message, Dr Samir V Kamat, OS and Director, outlined the progress made by the laboratory during 2015 and urged employees to rise to the occasion to meet the set targets in the coming year. Dr V Bhujanga Rao, DS and DG (NS&M), the Chief Guest, appreciated achievements made by DMRL.

Various laboratory-level DRDO Awards were distributed to meritorious employees by Dr Bhujanga

Rao and Dr Kamat. He also distributed mementos and certificates to employees who completed 20 years of service in DMRL. The programme ended with a vote of thanks by Shri U Ravi Kiran, Sc D, followed by a bada khaana.

## Institute for Systems Studies and Analyses

Institute for Systems Studies and Analyses (ISSA), Delhi, celebrated its 56<sup>th</sup> Raising Day on 30 September 2015. Dr Manas K Mandal, DS and DG (LS), Chief Guest of the occasion, inaugurated the event along with Guest of Honour Dr G Athithan, DS, CC R&D (SAM) and Director, SAG and Shri SB Taneja, Director, ISSA. In his Annual Day address, Shri Taneja highlighted the initiatives taken by ISSA in the areas of Wargaming, Modeling, Simulation, Strategic Planning and System Analysis and reflected upon the progress made by ISSA during 2014. He also gave an overview of the recent initiatives of ISSA for development of modeling and simulation systems for the Services

Dr Manas K Mandal appreciated the efforts made by ISSA in the area of System Analyses, Wargaming and Simulation. He highlighted various other efforts to shape the Combat Process besides the weapon systems. Dr G Athithan highlighted the growing role of system analysis and shared his views on defining a framework for Network Centric Warfare.

Dr Manas K Mandal and Dr G Athithan distributed laboratory-level DRDO Awards to DRDS, DRTC, and Admin and Allied categories.



Inaugural function of DMRL Annual Day



Dr Manas K Mandal inaugurating the Annual Day of ISSA

## Manpower Development Activities

Conferences/Seminars/Symposia/Training Courses/Meetings

### Course on Advanced Analytical Techniques for Materials Characterisation

A course on Advanced Analytical Techniques for Materials Characterisation was organised by Central Characterisation Facility (CCF) in **Defence Materials and Stores Research and Development Establishment (DMSRDE)**, Kanpur, during 5-9 October 2015 under Continuing Education Programme (CEP) of DRDO. Shri Mahesh Chandra, Sc E, the Course Director, briefed about the objective of the course and its contents. Dr N Eswara Prasad, Director, DMSRDE, inaugurated the course and delivered the inaugural lecture on Structure Characterisation and Mechanical Property Evaluation of Materials. Dr DK Setua, Associate Director, DMSRDE, presided over the inaugural function and delivered keynote lecture on Thermo-Analytical Techniques for Characterisation of Polymers and Composites Materials. Eminent speakers delivered technical/invited lectures/presentations to cover entire spectroscopic, chromatographic and thermal analytical techniques and their applications.



Release of course material on Advanced Analytical Techniques for Materials Characterisation

### Workshop on SAAS Software

**Defence Terrain Research Laboratory (DTRL)**, Delhi, organized a three-day workshop on Situational Awareness and Analysis System (SAAS 2.0) software during 13-15 October 2015. More than 70 officers from Army and DRDO participated in the workshop. Dr Chitra Rajagopal, OS and Director, Centre for Fire, Explosives and Environment Safety (CFEES),



Release of SAAS 2.0 software at DTRL

Delhi, inaugurated the workshop. She also released user-friendly military application enabled SAAS 2.0 software developed by DTRL to Maj Gen VP Srivastava, ADG Military Survey. The software will be helpful in visualization and analysis of the terrain for better perception.

Dr MR Bhutiyani, Director, DTRL, in his inaugural address briefed about the salient features of SAAS software. Maj Gen Srivastava congratulated DTRL for the valuable achievement and said that the software would be helpful for military users as other GIS software available in the market are very expensive and have many limitations.

Dr G Prusty, Division Head, GSAD, presented the evolution of SAAS software. Two technical presentations on SAAS 2D and SAAS 3D were given by Smt Karabi Mukherjee, Coordinator, SAAS Workshop, and Shri Vivek Saxena, Leader of SAAS team. Participants were also given the hands-on training on the SAAS software. Certificates were distributed to the participants by Shri Suchindra Mishra, IFA, who was the Chief Guest of the valedictory function.

### Course on Explosive, Environmental and Fire Safety

A CEP course on Explosives, Environmental and Fire Safety was conducted by **High Energy Materials Research Laboratory (HEMRL)**, Pune, from 26-30 October 2015. The course was inaugurated by Dr Manoj Gupta, OS and Officiating Director, HEMRL, Pune.

Twenty-one lectures were delivered on various aspects of safety by faculty from DRDO and non-



DRDO organisations during the course. Topics covered included: Explosives safety, electrical safety, fire safety, hazard analysis techniques, accident analysis, occupational safety and health, environmental pollution and safety aspects of pyrotechnics, high explosives etc. A fire fighting demo was also arranged during this course.

Shri KPS Murthy, OS and Director, HEMRL, distributed the certificates to the participants. He also emphasized on the importance of safety.



Participants of course on Explosives, Environmental and Fire Safety

## National Seminar on Scientific Publication and Evaluation

**Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi**, Department of Library Science, Coimbatore Institute of Technology (CIT), Coimbatore and Society for the Advancement of Library and Information Science (SALIS) jointly organised DRDO sponsored National Seminar on 'Scientific Publication and Evaluation: Writing Research Papers, Citation Studies and Plagiarism' at CIT during 27-28 October 2015. The objective of the seminar was to provide a national platform for learning and exchange of ideas on scientific publication and evaluation among the practicing librarians, faculty members of all disciplines, teachers and students of LIS. More than 212 librarians and faculty members from all over India participated in the seminar.

Dr Rajeev Vij, Additional Director, Defence Scientific Information and Documentation Centre (DESIDOC), Delhi, inaugurated the seminar and briefed the participants about the need of scientific publication, impact factor, H Index. Lectures were delivered in the areas of citation analysis, H-Index, G-Index, writing and

publishing research papers in quality journals, working with citation databases IPR, publishing ethics and plagiarism, statistical tools for research analysis, etc.



Release of presentations made during the seminar

## Course on Techniques of System Analysis

**Institute for Systems Studies and Analyses (ISSA), Delhi**, organized a CEP course on Techniques of Systems Analysis from 5-9 October 2015. The course was designed for Sc B to Sc F. Nineteen participants from various DRDO labs participated in the course.

The course covered a wide range of systems analysis techniques that included Statistical Modelling, Regression Analysis, Life Cycle Costing, Weapon Effectiveness and Damage Assessment, Optimisation Techniques, Heuristic Optimization Techniques, Combat Modelling, Decision Analysis, Analytic Hierarchical Process, Fuzzy Decision Analysis, Simulation-based Acquisition, Network Centric, Naval Operation Evaluation System, Strategic Planning and Computerised wargaming, etc. The lectures were delivered by experts from Institute for Defence Studies and Analyses (IDSA), Gas Turbine Research Establishment (GTRE) and ISSA.



Shri SB Taneja, Director, ISSA, addressing participants of the course

## Corporate Review Meeting of NSTL

Meeting of Corporate Review Committee (CRC) was held at **Naval Science and Technological Laboratory (NSTL), Visakhapatnam**, on 9 October 2015. Dr V Bhujanga Rao, DS and DG (NS&M), Co-Chairman CRC and Dr CP Ramanarayanan, DS and CC R&D (HR), Chairman CRC, gave the welcome address and opening remarks, respectively. Shri CD Malleswar, OS and Director, NSTL, presented brief overview on ongoing and future projects of NSTL, HR distribution with respect to various projects and facilities and functioning of different cells at NSTL. The CRC members also interacted with members of JCM-IV, Works Committee and NSTL CE Union; young scientists and officers and staff of DRTC and Admin and Allied Categories.



CRC members being briefed about Maareech Torpedo System

## Course on Network Security and Cryptography

**Research Centre Imarat (RCI), Hyderabad**, organised a special training course on Network Security and Cryptography from 12-16 October 2015. Twenty-six participated from various DRDO labs attended the course. Smt A Mangatayaru, Sc G, and the Course Director, briefed about the course contents. Smt S Rani Surender, Sc G, in her welcome address gave an overview of current trends in network security. Dr G Satheesh Reddy, SA to RM, and Director, RCI, inaugurated the course. In his inaugural address he stressed on importance of the course in DRDO. Major topics covered were: Computer Networks, IP Networking, Cloud Network Computing, Introduction to Cryptography, Introduction to E Commerce, Cyber Security, Encryption Techniques, etc.



Participants of course on Network Security and Cryptography with Dr G Satheesh Reddy

## Hindi Pakhwara

Defence Metallurgical Research Laboratory (DMRL), Hyderabad, organised Hindi Pakhwara from 1-16 September 2015. Competitions like essay writing, elocution, drafting and noting, dictation, quiz and antakshari for Hindi/non Hindi speaking officers and staff of the laboratory were organised. One hundred and twenty employees participated in the competitions.

Hindi Diwas was celebrated on 16 September 2015. Shri Homnidhi Sharma, Senior Manager (Official Language), BDL, was the Chief Guest for the function. Dr AK Singh, Sc G, presented the Annual Report of the Official Language Implementation Committee.

Dr SV Kamat, OS and Director, DMRL, urged to the employees to do their maximum work in Hindi.

Shri Hominidhi Sharma, appealed to all the scientists to publish their research work in Hindi. The Chief Guest also distributed certificates and prizes to the winners of the various events held during the fortnight.



Hindi Diwas at DMRL



## Personnel News

### Promotions

#### Outstanding Scientist /Scientist H

##### Advanced Systems Laboratory



Dr Vemana Venkateswara Rao, Sc H and Project Director, Agni 3, obtained his BE in Mechanical Engineering from AU College of Engineering from Vishakhapatnam and MTech (Thermal) from NIT, Warangal. He has been awarded MBA from IGNOU, New Delhi. He obtained PhD (Mechanical Engineering), from JNTU, Hyderabad and received the Best PhD Thesis Award from JNTU, Hyderabad in 2011.

He started his career as Sc/Eng-Sc in 1987 at SDSC SHAR Centre, ISRO, Sriharikota, where he worked on integration and testing of solid rocket motors for PSLV and GSLV developments. During 1995-1997 he was in-charge of launch vehicle integration of PSLV and involved in liquid stage integration and testing.

In 1997, he joined Defence Research Development Laboratory (DRDL), Hyderabad, as System Manager, SF&D, and carried out design, realization, integration and testing of large size solid rocket motors for Agni 3.

Since 2011 as Project Director, Agni 3, he has delivered missiles at site and static training missile for the regiment after providing training to the regiment. As a Technology Director, SPRITE (2007-2014), he was involved in managing a group of scientists and officers for the design, development, integration and static testing of various solid rocket motors of all programmes of missile complex (SF&D, ANSP, ASTRA, HELINA, PJ-10, AD, NAG, LRSAM etc.)

Dr V Venkateswara Rao has received Best Scientist Award from Chairman, ISRO in 1996 and Agni Technology Pathbreaking Award in 2007. He has published/presented 25 papers in various international

and national journals and presented in National and International Conferences. He is also guiding five PhD projects.

He is a life member of several professional societies like, Indian welding society, Indian Institute of welding, Aeronautical Society of India, Indian Society of Non-destructive Testing, High Energy Materials Society of India and Astronautical Society of India.

##### Defence Metallurgical Research Laboratory



Dr G Madhusudhan Reddy has been promoted to the rank of Outstanding Scientist/Sc H wef 9 October 2015. Dr Reddy obtained his bachelor's degree in Mechanical Engineering with distinction from Kakatiya University, Warangal in

1985. He completed his master's degree in Welding Engineering from University of Roorkee in 1987 (now IIT Roorkee) and PhD in Metallurgical Engineering from IIT Madras in 1999. He joined DRDO as Sc B in 1987 and rose to the position of Sc G in 2010.

Dr Reddy has made significant contributions in providing solutions to a wide range of technological issues by establishing welding technology for similar and dissimilar advanced alloys. He focused on the welding of armour steels, enhancement of ballistic performance of armour steel welds, welding technology for non-weldable Al alloys, incompatible materials joining, ceramics-metal brazing, and enhancement of weldability through microstructural control for difficult-to-weld class of alloys. Dr Reddy and his team successfully fabricated the nose cap shell for submarine launched ballistic missile, through an innovative application of Friction-stir welding.

Dr Reddy has served as the national committee member to review the problems encountered in aluminium alloy modules of satellite launch vehicles. He is a member of Task Force for indigenous development

of welding consumable for manufacture of battle tanks. Dr Reddy contributed significantly to the structural integrity of joints for gas turbine components, as the Chairman of the weld certification committee. His expertise was utilized by several organisations such as Advisory Committee for Centre for Laser Processing, ARCI, Hyderabad, and Member, Board of studies for major universities of Telangana and Andhra Pradesh. Dr Reddy is a member of failure analysis team on the premature failure of several motor casings made of ultrahigh strength steel, air bottles, drag line buckets, battle tanks etc. Dr Reddy has assiduously worked to set-up at DMRL, state-of-the-art welding facilities, which he continues to lead. He is a member of Editorial Board of Defence Technology International Journal and Indian Welding Journal.

Dr Reddy has published over 230 research papers in the international referred journals and equal number in the Proceedings of International and National Conferences. He has the distinction of guiding 22 PhD and 35 MTech students. He has been designated as Distinguished Professor by Indian National Academy of Engineering to promote Industry-Institute interactions.

Dr Reddy has been bestowed with INAE Young Engineer Award in 1998 from Indian National Academy of Engineering; Engineer of the Year Award in 2002 and Andhra Pradesh Scientist Award in 2006. In 2007, Ministry of Steel and Mines honoured him with Metallurgist of the Year Award. Dr Reddy has received the certificate of Academic Distinction 'Sudarshan Bhat Memorial Prize' (1999) for the best PhD Thesis in Metallurgical Engineering from IIT-M, Chennai. Dr Reddy has also been awarded Scientist of the Year Award in 2013 by DRDO.

Dr Reddy is also a recipient of Binani Gold Medal (2010, 1994); SAIL Gold Medal (2013) of the Indian Institute of Metal; Technological Award (1995) for his scientific contributions in establishment of fabrication procedure for armour components; SK Mazumdar Memorial Research Award (2012) from Indian Welding Society; 35 best paper awards. Dr Reddy has been elected Fellow of the ASM International,

National Academy of Engineering, Andhra Pradesh Academy of Sciences, Indian Institute of Metals and Indian Welding Society. He is life member of several professional societies.

## Naval Physical & Oceanographic Laboratory



Shri S Kedarnath Shenoy, Director, Naval Physical and Oceanographic Laboratory (NPOL), Kochi, has been promoted as Outstanding Scientist/ Sc H wef 7 October 2015. He is a postgraduate in Physics with specialization in Electronics from

University of Kerala and MTech in Computer Science from IIT Bombay, Mumbai. He completed one-year Advanced Training Course in Nuclear Science and Engineering at the BARC Training School, Trombay during 1982-83 and joined the Reactor Control Division of the BARC as Scientific Officer C in 1983 where he worked on the development of a Metallographic Image Analysis System. He has also undergone a three months training programme in advanced software engineering methodologies conducted by Carnegie Mellon University and Indus Tech at Pittsburgh, USA, during 1986.

Shri Shenoy joined NPOL as Sc B in 1984. He has handled various responsibilities, viz., Project Manager, Division Head, Group Head and Project Director and contributed to a number of projects and technology development programmes such as Action Speed Tactical Trainer, Modular Data Bus, Weapon Computer for the indigenous Light Combat Aircraft Tejas, Hull Mounted Sonar System HUMSA-NG for Naval warships, and various other sonar systems and technologies for ship, submarine and airborne platforms.

Before taking over as Director, he served as Associate Director In-charge of the Electronics Groups leading a team of over 100 scientists and engineers working in various areas of electronics including signal conditioning, power electronics, signal processing and embedded computer hardware and software for sonar systems. He also supervised Hull Mounted Sonar project.



He is recipient of the VASVIK Award in Electronics for the year 1990 for his contributions to the development of an indigenous fiber optic data bus system for warships of the Indian Navy. As Project Director, the team under his leadership was awarded the DRDO Performance Excellence Award for the year 2010 by Shri AK Antony, the then Raksha Mantri, for the successful development of HUMSA-NG sonar system which is installed on the latest Frigates of the Indian Navy and is being fitted on many other Naval Ships. He has also received a number of awards at the laboratory- level including the Laboratory Scientist of the year 2008. He assumed charge as Director NPOL wef 1 March 2015 and since then has taken a number of initiatives to expedite induction of systems, which are under user evaluation, streamline development of new systems and technologies and for refurbishment and acquisition of facilities and infrastructure.

## Research Centre Imarat

Shri M Ugender Reddy obtained his BTech degree in Mechanical Engineering from Kakatiya Institute of Technology and Science, Kakatiya University, Warangal in 1984 and MTech in Mechanical Engineering from National Institute of Technology, Warangal in 1986.

Shri Reddy started his career as Sc B with Defence Research and Development Laboratory in 1986 by joining its Control Actuation Division of Directorate of Flight Control System. His initial work involved design, development and realization of Electro-Hydraulic System for Prithvi class of missiles. He was posted to Research Centre Imarat (RCI) in 1989 and was instrumental in productionisation of Prithvi Actuation System with CEMILAC certification and its deployment with Indian Armed Forces. Later as System Manager; he designed, developed, realized and productionised for the first time state-of-the-art brush-less DC Motor-based High power ElectroMechanicalActuation System for underwater/ aerodynamic control of K-15 Missile System.

As Technology Project Leader, Shri M Ugender Reddy developed four types of ElectroMechanicalActuation

System (1 rotary and 3 linear) for variety of programmes like AD and K-15. During the process, he established facilities for characterisation of permanent magnets, winding of BLDC motors and evaluation of actuators. As an offshoot, Agni and HSTDV also used the technologies in realization of EMA.

In 2009, he was assigned the role of Project Director, Medium Range Surface-to-Air Missile, an internationally collaborated weapon system programme with Israel as a turnkey project for IAF. The programme involves design, development, production, deployment and support for 22 years. Under his able leadership, the programme has graduated from drawing board to proto hardware realization and qualification. He guided the programme to achieve its multi-faceted goals satisfying multiple stakeholders (design authority/international partner, customer, certifying agencies etc.). The programme has already realized hardware for first deliverable firing units and expected to go for flight trial soon prior to handing over to IAF. The programme has also realized its first deployment site.

Shri M Ugender Reddy is recipient of DRDO Technology Group Award in 2001 and DRDO Performance Excellence Award in 2007. He is life member of Aeronautical Society of India, Magnetic Society of India, ASCI and INSRAM.

## Awards

### Best Technical Paper Award



**Dr K Veera Brahmam**, Sc D, Advanced Systems Laboratory (ASL), Hyderabad, received the Best Technical Paper Award from the British Institute of Non-Destructive Testing (BINDT) for the research paper on 'Development of Non-contact Method of NDE for Online Cure Monitoring of Carbon-Phenolic Composites using Gas-Chromatography' at the 54<sup>th</sup> Annual Conference of BINDT at Telford, UK, held during

8-10 September 2015. The paper describes a new technique of NDE developed by Dr K Veera Brahman from the conceptual development to realization of the Online Gas Chromatography System, viz., hardware development, optimization of experimental parameters, data acquisition and analysis, coupling of gas-chromatograph equipment with autoclave facility and finally development of cure monitoring technique for improvement of resin content in carbon-phenolic components, which is most essential for heat shield applications.

## Fellow of the National Academy of Medical Sciences

**Dr (Smt) Shashi Bala Singh**, OS and Director, Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi, has been elected Fellow of the National Academy of Medical Sciences (NAMS) for her contributions in the field of Applied Physiology. The honour was bestowed for her significant contributions to the understanding of high altitude physiology for improving the quality of life of the soldiers deployed at inhospitable areas.



Dr (Smt) Shashi Bala Singh receiving the Fellowship of the National Academy of Medical Sciences

## Engineer of the Year Award



**Dr Amit Bhattacharjee**, Sc F, Defence Metallurgical Research Laboratory (DMRL), Hyderabad, has been awarded Engineer of the Year Award by the Institution of Engineers (India), AP State Centre, Hyderabad.

## Young Engineer of the Year Award



**Shri Jalaj Kumar**, Sc D, DMRL, Hyderabad, has been awarded Young Engineer of the Year Award by the Institution of Engineers (India), AP State Centre, Hyderabad.

## Higher Qualification Acquired

## Defence Institute of Advanced Technology



**Shri Vijay D Pattar**, Assistant Librarian, Defence Institute of Advanced Technology (DIAT), Pune, has been awarded PhD in Library and Information Science from Karnataka University, Dharwad, for the thesis titled Design and Development of

Information Literacy Programmes and Practices in the Electronic Environment with special reference to Engineering College Libraries in Mumbai.

## Defence Research Laboratory



**Shri Baikuntha Jyoti Gogoi**, Sc D, Defence Research Laboratory (DRL), Tezpur, has been awarded PhD in Chemistry from the Gauhati University, Guwahati for the thesis titled Isolation and Characterization of Bioactive Molecules from *Dillenia*

*indica L.* of Assam and its Value Addition.

## Estate Management Unit

**Shri Anil Khurana**, Sc F, Estate Management Unit (R&D), Chandigarh, has been awarded PhD in Management; Doctorate in Business Administration (DBA) degree by Aligarh Muslim university (AMU), Aligarh, in Collaboration with All India Association (AIMA)-Centre for Management Education (CME), New Delhi, for the thesis titled Quality Management Systems and Performance in Indian Defence R&D Organisation.



## Sports Round-up

Regional Centre for Military Airworthiness (RCMA), Chandigarh, organised DRDO North Zone Table Tennis Tournament 2015 during 12-14 October 2015. Sixty-six players from 16 DRDO laboratories of North Zone participated in the tournament.

Dr PS Kohli, Regional Director, RCMA, Chandigarh, inaugurated the event on 12 October 2015. Awards distribution ceremony was conducted on 14 October 2015. Dr Manjit Singh, OS and Director, Terminal Ballistic Research Laboratory (TBRL), Chandigarh; Shri Ashwagosha Ganju, OS and Director,



Dr PS Kohli presenting trophy to Team Champion SSPL

Snow and Avalanche Study Establishment (SASE), Manali; Dr Bhuvnesh Kumar, Director, Defence Institute of High Altitude Research (DIHAR), Leh; Dr PS Kohli, and Dr Anil Khurana, Estate Manager, EMU, Chandigarh, graced the award distribution function and distributed awards to the winners and runners-up of various events organised during the

tournament.

The following are the events and winners of the tournament:

Events	Winner	Lab	Runner up	Lab
Men's Singles	MA Khan	RCMA	Kamalkant	SASE
Men's Doubles	AK Pandey and Vishal Das	DMSRDE	Kamalkant and Karmjit	SASE
Veteran Singles	AK Pandey	DMSRDE	BP Upreti	ITM
Veteran Doubles	BP Upreti and OK Munakia	ITM	PK Srivastava and HS Gusain	SASE
Women's Singles	Neeraj Jain	SSPL	Neeti Jain	SASE
Team Championship	SSPL		IRDE	

### READERS' VIEWS

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The Editor, DRDO Newsletter  
DESIDOC, Metcalfe House, Delhi-110 054

## Visitors to DRDO Labs/Estts

### Defence Terrain Research Laboratory

Dr S Christopher, Secretary, Department of Defence R&D and DG, DRDO, visited Defence Terrain Research Laboratory (DTRL), Delhi, on 15 October 2015. Dr MR Bhutiyani, Director, DTRL, gave a presentation on the overall activities of the laboratory. DG visited Geo Intelligence Mission Lab, Software Development Lab, and Early Warning System Lab for Landslides.



Dr Christopher being briefed about DTRL activity

### High Energy Materials Research Laboratory

Dr S Christopher, Secretary, Department of Defence R&D and DG DRDO, visited High Energy Materials Research Laboratory (HEMRL), Pune, on 27 October 2015.

### Institute for System Studies & Analyses

A three-member study team of Nepal Army lead by Col Pawan Raj Ghimire visited Institute for System Studies and Analyses (ISSA), Delhi, on 7 October 2015 to get familiar with Simulation and Modelling-based Wargame products. Shri SB Taneja, Director ISSA, welcomed the team. Shri S Chandramauli, GD (WGSG-II) gave a brief overview on current products under development at ISSA. Shri JK Bhargava and Shri HS Bharati gave detailed presentation on INFCOTT Software followed by a presentation on Army Air Defence Simulation System by Dr D Vijay Rao. The visiting delegation took keen interest in the products.



ISSA scientists interacting with the Nepali study team

### Proof and Experimental Establishment

Dr S Christopher, Secretary, Department of Defence R&D and DG, DRDO, visited Proof and Experimental Establishment (PXE), Chandipur, on 16 October 2015 along with Shri AM Datar, DS and DG (ACE). They interacted with the Director and other scientists on various ongoing projects and witnessed the firing activities at PXE.



Dr Christopher interacting with PXE scientists

### Scientific Analysis Group

Dr S Christopher, Secretary, Department of Defence R&D and DG, DRDO, visited Scientific Analysis Group (SAG), Delhi, on 18 October 2015. Dr Athithan, DS and Director, SAG, gave a detailed presentation to Secretary about the various activities of SAG including cryptanalysis and evaluation. He also presented the details of the current projects and the ones to be taken up shortly by the lab.