



**Directorate of Outcome**  
**Outcome Report(Event/Activity Organized @ AUH)**

**1. General Information**

**Date:** 30<sup>th</sup> March 2022

**Event Type:** Expert Lecture

**Event Title:** Expert Lecture by DRDO scientists

**Event Theme:** Boost the newly launched Defense Technology Course

**Venue:** D Block Conference Room

**Web/Video Link of the Event:** <https://amityuni.live/85876206436>

**Organized by:** Defense Cluster and Amity Centre of Nanotechnology

**In collaboration with:** Govt. Agency (Central)

**Event Level:** Institutional and National (The event was organized on hybrid mode so that all Amity Universe defense cluster people can join)

**Student Participation\*:** 45

**Faculty Participation\*:** No. of Faculty Members from AUH (Dept. wise): 2 ACNT, 1 ASAS, 3 ASET, 1 Dean student welfare, Online participants: 49

**Participation from outside AUH\*:** No. of Students & Faculty Members- NA

*(Enclose attendance sheets in given format)*

**Event Coordinator(s) with designation:** Prof. Atul Thakur, Director ACNT

**Details of Expert/Speaker/Resource Person/Judge:**

SN	Country Name	Expert Name	Organization Name	Designation	Specialization	Contact No.	E-mail Id	CV of Expert (Yes/No)	Major Areas where Amity can Collaborate with expert	Recommended by
1	India	Shri Prateek Kishore	TBRL, DRDO	Director	Explosives and different nanomaterials		Kishore.prateek@yahoo.com			
2	India	Dr. P.K. Soni	TBRL, DRDO	Jt. Director	HMX and other explosives		pramodsoni@yahoo.com			

**Criteria of Inviting Resource Person/Judge/Speaker/Judge (Write a paragraph):**

For joint collaborations and internships for students of the newly launched course of M.Tech in Defense Technology.

**Were the guest known in advance and if yes, from what previous interaction (Write a paragraph)?**

As Prof. Atul Thakur has completed one research project with Terminal Ballistic Research Laboratory (TBRL) DRDO, guided some scientists for PhD degree earlier and have since known Shri Prateek Kishore, Director TBRL and Dr P.K. Soni Jt. Director TBRL. I appraised these scientists about the Defence Cluster at Amity and invited them to interact with our M.Tech Defence Technology Students, Research Scholars and Scientists. The main motive of this event was to provide exposure and insight into DRDO activities for our M.Tech. Defence Technology students and scientists involved in defence related research and also to explore joint ventures.

**2. Outcome of the Event with Time Lines (Proposed/Achieved)**

Envisaged Outcome	Tangible/Intangible	Achieved/Proposed	Target date & responsibilities (if proposed)	Details of outcome
<b>1. Outcome related to Academia Connect</b>				
a) Collaborations for Research Papers / Conference Papers/ Book Chapter etc.				

b) Collaborations & MOU for Research Guidance [PhD, PG & UG (summer training, Dissertation)] & Projects/Use of Instruments etc.				
c) Collaboration for Funded Projects				
<b>2. Outcome related to Industry Connect</b>				
a) Placement				
b) Collaborations for Research Papers				
c) Collaborations & MOU for Research Guidance [PhD, PG & UG (summer training, Dissertation)] & Projects/Use of Instruments				
d) Collaboration for Funded Projects				
<b>3. Outcome related to Society Outreach</b>				
a) Benefit to society in terms of Health & Hygiene				
b) Benefit to society in terms of Education				
<b>4. Outcome related to Students Learning &amp; Grooming</b>				
<b>5. Any other</b>				

### 3. Event Report along with glimpses of the event (Photographs)

#### 3.1 General Introduction of the Event

As an initiative by the Defense cluster, we are organizing two Expert talks by Shri Prateek Kishore, Director, TBRL, DRDO and Dr. P.K. Soni, Jt. Director, TBRL, DRDO to enhance and discuss the defence technology challenges and opportunities which would be very beneficial and embarking for the newly launched course on Defence Technology.

#### 3.2 Inspiration & Objectives of the Event

The objective behind this event was to put together all the people of the defense cluster and to promote connectivity among the experts in defense technology and to share the latest updates by interacting with the specialists in this field.

To enlighten the students of M.Tech Defense Technology and how it would be beneficial and embarking for this newly launched course.

#### 3.3 Brief about the address/talk of speakers

Hon'ble founder president graced the occasion and provided words of wisdom. During his talk he offered Honorary Professor to Shri Prateek Kishore at AUH.

Dr. W . Selvamurthy sir gave the address and concluding remarks by explaining the objectives of forming the defense cluster group are:

- To promote the connectivity among the experts in particularly Defense Technology.
- To give force multiplier effect to the thoughts through interaction of various minds working in a specific area together in functional cluster mode.
- To share latest updates in Defense Technology. Formulation of multidisciplinary integrated projects for submission to the funding agencies.

Prof. Atul Thakur, Director AINT and Chief Coordinator for Thematic Research Cluster - Defense Technology gave the welcome address where he discussed thanked the Hon'ble founder president Sir Dr. Ashok K Chauhan and Hon'ble Chancellor Dr. Aseem K Chauhan to make self reliant India. He explained that this is the 17<sup>th</sup> research cluster named as "Defense Cluster". This cluster is multidisciplinary and versatile as it comprises of scientists from all the Amity Universe. The objective behind formation of this cluster is to promote connectivity among the experts in defense technology and to share the latest updates by interacting with the specialists in this field. He also explained how this talk will enlighten the students of M.Tech Defense Technology and how it would be beneficial and embarking for this newly launched course.

## Shri Parteek Kishore

OS and Director, TBRL

### Topic - Defence Technologies – Challenges and Opportunities

- 1) Testing and performance evaluation
- 2) Production and processing of high explosive compositions
- 3) Arena layout for lethality assessment of shells, bombs and warheads
- 4) Instrumented ballistics range
- 5) High speed photography for terminal ballistics
- 6) Instrumentation for blast and damage
- 7) 450 KV flash radiography
- 8) Modeling and simulation capabilities

Products developed by TBRL

- Less lethal plastic bullets
- Exploders for torpedoes
- Fine HMX
- Mechatronic fuse for MMHG
- ESA Fuse for mortars and Bombs

Operational Scenario

- Hit before you get detected
- Hit, beyond survivability
- Detect and disable C4ISR of enemy, before getting detected

## Dr Pramod Kumar Soni

- Defence research & Development Organization (DRDO)  
Terminal Ballistics Research Laboratory (TBRL)

### Topic – Curiosity Driven Sciences: Leading to Technology and Product

#### □ Investigation

- Why few of the solid phase transition not studied ??
- Why few phase transition happens only in solution phase, that to in one direction only ??
- What condition lead to formation of less stable polymorphs and is it possible to revert them back to stable form ??
- What are special properties of less stable polymorphs ??
  - Experiments on HMX compounds such as trinitrotoluene (TNT), RDX i.e. silver nitrate etc.
  - Interconversion of various polymorphs i.e.  $\alpha$ ,  $\beta$  and  $\gamma$  forms of various HMX compounds
  - Solid phase reactions which lead to solid phase transitions: Why only limited transitional phenomenon are studied.
  - Conversion of stable polymorphs into less stable polymorphs under certain conditions.
  - Conversion of  $\gamma$  form which is less stable into more stable  $\beta$  form via energy driven process.
  - Removal of water molecule from the  $\beta$  form to cause phase transformation of  $\beta$  form into  $\gamma$  form

#### □ Reported Phase Transformation

Inter conversion of different polymorphs of HMX with temperature Sensitivity to impact:  $d > g > a > b$   
large volume expansion (7%) occurs during the b-d phase.

### 3.4 'Take Homes' for the Guest and Attendees

To become self reliant India.

Technology development and product development are equally important.

Dedication and sincerity is required with a focused approach.

Future technocrats should work to achieve these objectives.

### 3.5 Future plan for utilizing the contacts developed with the Invited Guests

- Visit of our M.Tech. Defence Technology Students to TBRL
- B. Tech/M.Tech Internship at TBRL
- Enrolling TBRL scientists for PhD program at Amity University
- Offer research facilities at TBRL for our students
- Endorse our research projects

- Endorse workshops/seminars

**3.6 Budget of the Event(Budget Sanctioned, Total Expenditure & Revenue Generated) NA**

**3.7 Details of Awards if Any:**

Awardee Details	Award / Position / Recognition Secured	Title of Innovation/ Start-up Secured the Award / Recognition	Award/Recognition/ Achievement Received for
NA	NA	NA	NA

**3.8 Photographs with caption (also share high resolution JPEG files of photographs)**



































### 3.9 Scanned copy of attendance sheets



**Expert Lecture by DRDO Scientists**

**Attendance Sheet**

Sr. No.	Faculty Name & Designation	Department / Institute	E-Mail	Phone Number	Signatures
1	Shivabijani (Student)	BCA	vallakati.singh@amity.edu	6305390550	
2	Aromma Singh (Student)	BSC IT	Aromma.singh@s.amity.edu	7900940365	
3	Harshit Aggarwal (Student)	BSC IT	harshit.aggarwal2@s.amity.edu	9587021039	
4	Anoop Varghese (Student)	BCA	anoop.varghese@s.amity.edu	7678481793	
5	A. Govind Reddy	BCA	govind180603@gmail.com	7815999609	
6	Ankita	BSC IT	advankita@99@gmail.com	8800679656	
7	Aastha Sharma	BCA	aasthasharma08@gmail.com	7082099065	
8	Rahul Raj Singh (STUDENT)	BSC IT	rahulraj1234@gmail.com	9873466111	
9	Sumukh (Student)	BSC IT	sumukhnik@gmail.com	7015518371	
10	Rupesh Mann (Student)	BSC IT	maanrupesh2002@gmail.com	9896140714	
11	Aditya Bagchi (Student)	BSC IT	adityabagchi14@gmail.com	7428187173	
12	Yushar Saini	BCA	tusharsaini1916@gmail.com	6350081378	
13	Divyansh Khanchelwal (Student)	BCA	Divyansh.khanchelwal@s.amity.edu	9871508401	
14	Avinash (Student)	BSC IT	avinash.sharma142002@gmail.com	9306166069	
15	Shour (Student)	BSC IT	kumar.padmada@gmail.com	844914677	
16	Dr. Sandeep Singh	ASET	sphgate@amity.edu	9971847502	
17	Nishit Singh	M.Tech DT.	nishit.jain@amity.edu	9868060660	
18	Sanaya Kalra	M.Tech DT	sanaya.kalra@s.amity.edu	2937924216	
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### Expert Lecture by DRDO Scientists

#### Attendance Sheet

Sr. No.	Faculty Name & Designation	Department / Institute	E-Mail	Phone Number	Signatures
1	Dr. Sanjeev Sharma Head (ME)	Mechanical E. S. S.	s.sharma26 @ggm.amity.edu	9560242879	[Signature]
2	Dr. S. B. Gupta	Aerospace Engg ASET/AVH	sb.gupta@ggm .amity.edu	9557351634	[Signature]
3	Manish K. Bharti	Aerospace/ASET	mkbharti@ ggm.amity.edu	9560393225	[Signature]
4	Atul Thakur	Dynamics AINT	a.thakur @ggm.amity.edu	9805192061	[Signature]
5	Dr. Rajan Kumar Singh Bahi	DSW	rsingh@amity.edu	8130281717	[Signature]
6	Dr. P. K. Sonu	TBRL DRDO	pramodsonu@ talva.com	9417936461	[Signature]
7	Manoj Pandey	ECE/ASET	mkpandey@ ggm.amity.edu	965936793	[Signature]
8	Yogita	ACNT/A&INT	jsbmun2@gmail.com	9810886229	[Signature]
9	Neethy	ASAS (Physics)	neethy1@amity. edu	8222051821	Neethy
10	Sonam Kumari	ASAS (Physics)	sonahit101@ gmail.com	9996776175	[Signature]
11	Aman Kumar Yadav	B.S.C (IT)	asaman8285 @gmail.com	8285334387	[Signature]
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13	Kapil Dagar	BCA	harshitdagar913@ gmail.com	9285279474	kapil Dagar
14	Udit Sharma	BCA	udit.sharma@ amity.edu	920531033	[Signature]
15	Rahul Sehrawat	B.S.C (IT)	rahulsehrawat 479@gmail.com	9899208840	[Signature]
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18	Dr. Ducky Kishore	ACNT	dkishoria@ ggm.amity.edu	9811569971	[Signature]
19	Saanthakharbanda	ACNT	skharbanda1 @ggm.amity.edu	9999228608	[Signature]
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**Expert Lecture by DRDO Scientists**

**Attendance Sheet**

Sr. No.	Faculty Name & Designation	Department / Institute	E-Mail	Phone Number	Signatures
1	Prof. Preeti Thakur	HOD Physics SAS	pthakur@amity.edu	9773978369	P. Thakur
2	Dmesh Kumar	AINT	dk550@hotmail.com	9510607439	Dmesh
3	Praveen M	M. Tech Defence Tech	praveen.m@amity.edu	9025756805	Praveen
4	Himanshu Acharya	A SET	himanshuacharya2K13@gmail.com	7231908343	H Acharya
5	Vardaa Sehgal	BCA	vardaa04@gmail.com	9773676783	Vardaa
6	Rhythm Saxena	BSC IT	rhythmisaxena@s213@gmail.com	9760958061	Rhythm
7	Vday Bidhan	BCA	Bidhan Vday@gmail.com	9319311427	Vday
8	Harish	BCA	hg260803@gmail.com	7082573116	Harish
9	Saurabh	BCA	saurabh3@amity.edu	9050368036	Saurabh
10	Aryan Vasishtha	BCA	aryanvasishtha@gmail.com	7017869559	Aryan
11	Neha	B.Sc (IT)	sonyadav2179@gmail.com	7056006377	Neha
12	Archana Sharma	B.Sc (IT)	archana.sharma2007@gmail.com	8930799703	Archana
13	Ranisha Devi	BCA	ranishadevi2003@gmail.com	8950631204	Ranisha
14	Aditi Srivastava	BCA	aditi.shri2411@gmail.com	9311569629	Aditi
15	Rebecca Simon	BCA	rebecca.simon2003@gmail.com	9818384146	Rebecca
16	Harsh Kashyap	BCA	harshkashyap301@gmail.com	9315392246	Harsh Kashyap
17	MONV KHUSHAWA	BCA	monvkush338@gmail.com	9310031258	Monv Khushawa
18	Ojas Goyal	BCA	ojasgoyal15@gmail.com	9844000029	Ojas
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**Signature of HOI**

**Stamp of the Department**