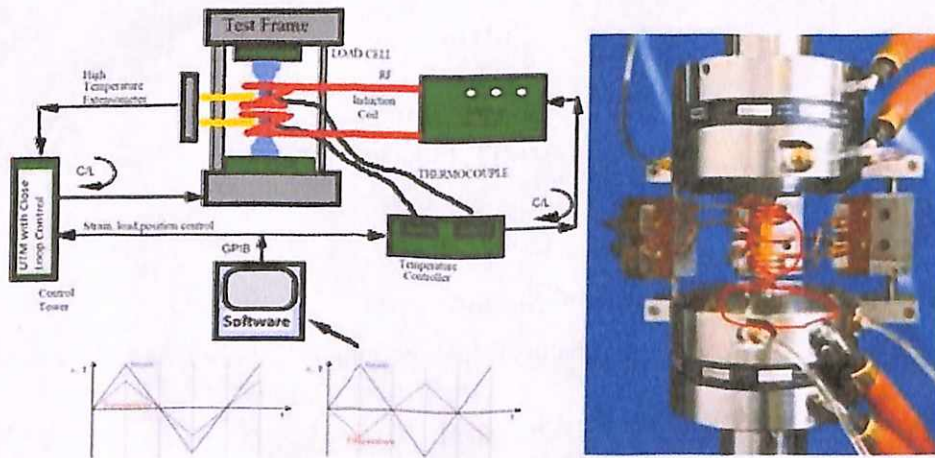




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S.No.35, Plot No. 5/6, Lohgaon, Pune-411 047

A REPORT ON
ONE DAY SEMINAR ON
“ADVANCED MECHANICAL TESTING FOR DAMAGE
TOLERANCE DESIGN”

19th April 2023



Organized By



Department of Mechanical Engineering

Marathwada Mitra Mandal's Institute of Technology, Lohgaon, Pune

Approved by AICTE New Delhi, Recognized by DTE Maharashtra & Affiliated to Savitribai Phule Pune

NAAC "A" Accredited Institute



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Prof. Sudhir S. More

Head of Department, Mechanical Engineering, MMIT, Lohgaon, Pune

Coordinator

Prof. Amol S. Bhanage

Dean, Research and Development, MMIT, Lohgaon, Pune

Speaker

Dr. G. Sudarshan Rao

Dy. Head, Materials Testing Division

Materials and Mechanical Entity

Vikram Sarabhai Space Centre

Thiruvananthapuram, Kerala, India



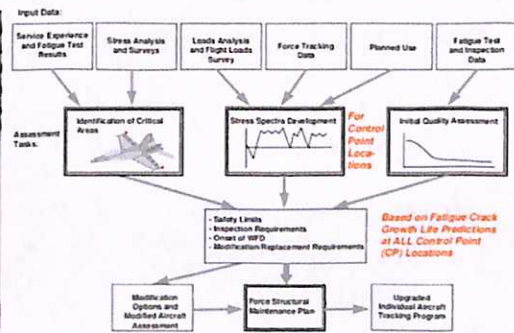
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MARATHWADA MITRA MANDAL'S INSTITUTE OF TECHNOLOGY,
LOHGAON, PUNE

WEBINAR ON

ADVANCED MECHANICAL TESTING FOR DAMAGE TOLERANCE ANALYSIS



APRIL 19, 2023
9:00-10:00 AM

GUEST SPEAKER



Dr. Sudarshan Rao

**Scientist, Vikram Sarabhai Space Centre
(ISRO), Trivandrum**

Registration Link: <https://forms.gle/Vd2SoGmihKNyRwhP8>





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The guest speaker was invited by Prof. Amol S. Bhanage. The Coordinator also given information about Marathwada Miira Mandal’s Trust and Marathwada Mitra Mandal’s Institute of Technology (MMIT) Institute.

The seminar was conducted on **Google Meet Platform**.

The details about Webinar:

Title of Seminar: Advanced Mechanical Testing for Damage Tolerance Design

Date: 19th April 2023

Google Meet Link: <http://meet.google.com/kwm-kynx-zzb>

Time: 9.00 A. M. – 10.30 A. M.

After successful completion of Seminar, the Question Answer session was organized for participants.

About the Speaker:

Dr. G Sudarshan Rao, is working as Scientist/Engineer SF at Materials Testing Division, Materials and Metallurgy Group, Vikram Sarabhai Space Centre, Trivandrum. The areas of specialization include the mechanical behaviour of materials, structural testing and elevated temperature testing. He has 21 international journal publications and 15 Conference presentations. He is currently Dy. Head, Materials Testing Division in Materials and Metallurgy Group of Vikram Sarabhai Space Centre. He is recipient of two ISRO team Excellence Awards, SAME award towards his contributions in indigenization of launch vehicle materials.





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Vote of thanks:

Prof. Amol Bhanage, Dean Research & Development gave the vote of thanks expressing the gratitude towards resource person for sparing their valuable time from their busy schedule. He expressed thanks to Management for supporting and to Principal for motivating to arrange the Seminar. He also expressed thanks to all the participants of the Seminar and all the staff from MMIT for their dedication to show all aspects of the process, making the Workshop is a valuable learning experience.

Outcomes:

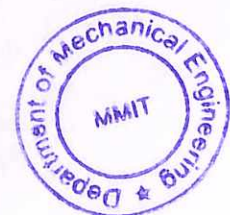
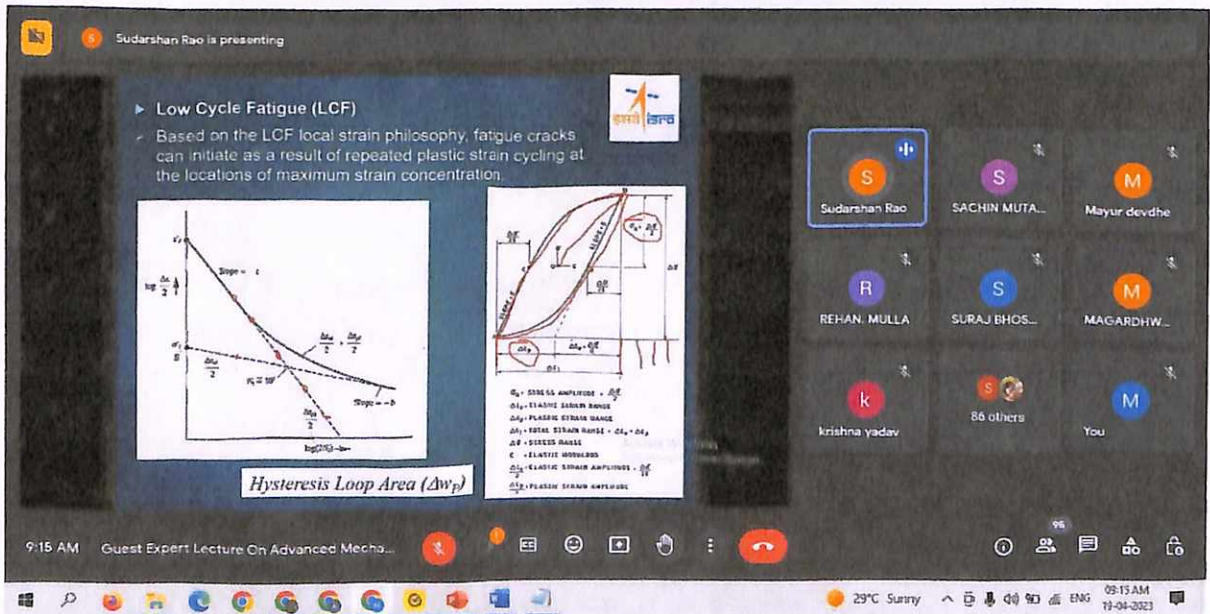
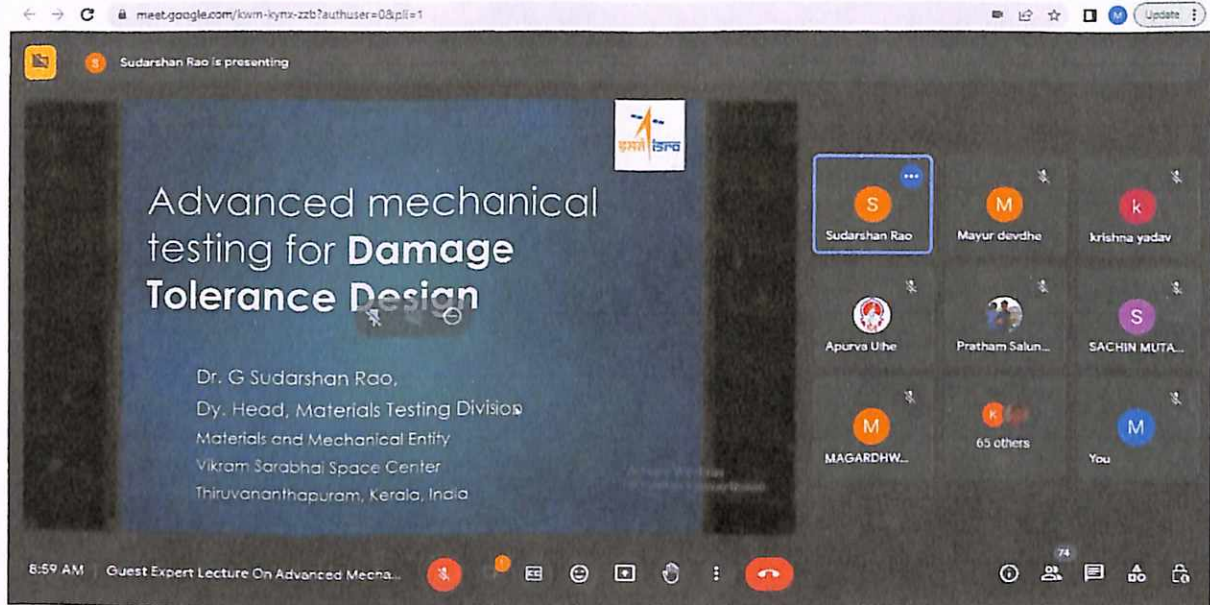
The One-Day seminar on “**Advanced Mechanical Testing for Damage Tolerance Design**” was a success, with the participants gaining insights into the fatigue crack initiation, fatigue crack propagation, thermal fatigue testing, testing challenges, etc. The workshop provided a platform for participants to interact with experts in the field, share their experiences, and enhance their teaching skills. The event was well-organized, and the feedback from the participants was positive, indicating the effectiveness of the workshop in achieving its objectives.

The Webinar was concluded with vote of thanks and feedback of Participants. After submission of Participants feedback, E-Certificate provided to Participants.





Glimpses of the Session





Sudarshan Rao is presenting

Low Cycle Fatigue: Predicting the lives

Coffin-Manson $\epsilon_a^p = \frac{\Delta \epsilon_f}{2} = \epsilon_f (2N_f)^{-1/E}$

Ostergren $\sigma_{max} \Delta \epsilon_p N_f^m = C_1$

Tomkins $\Delta \sigma^2 \Delta \epsilon_p N_f = C$

The evaluated parameters are back substituted to get the life

Summarize LCF Next... TMF

9:24 AM Guest Expert Lecture On Advanced Mecha... 29°C Sunny 19-04-2023

Sudarshan Rao is presenting

Test Setup

Isothermal fatigue and TMF test setup

9:37 AM Guest Expert Lecture On Advanced Mecha... 31°C Sunny 19-04-2023





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Sudarshan Rao is presenting

Design Considerations of Fracture Mechanics

Design Procedure Flow Chart

9:46 AM Guest Expert Lecture On Advanced Mecha...

31°C Sunny 09:46 AM 19-04-2023

Sudarshan Rao is presenting

Fatigue Crack Propagation

Paris' Law $\frac{da}{dN} = C(\Delta K_I)^m$

where, a = flaw or crack size;
 N = number of fatigue cycles
 C and m are material constants

| Material | C | m |
|---------------------------|-----------------------|------|
| Martensitic steels | 0.66×10^{-4} | 3.25 |
| Ferritic-Pearlitic steels | 3.6×10^{-10} | 3.0 |
| Austenitic steels | 3.0×10^{-10} | 3.25 |

9:52 AM Guest Expert Lecture On Advanced Mecha...

31°C Sunny 09:52 AM 19-04-2023





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List of Participants:

| Sr. No. | Name of Participants | Institute |
|---------|--------------------------|---|
| 1. | Mr. Bhagesh Chincholi | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 2. | Mr. Naseer Tadmod | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 3. | Mr. Saurabh Bante | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 4. | Mr. Satvik Dongare | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 5. | Mr. Bryan Dcosta | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 6. | Mr. Chetan Meshram | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 7. | Mr. Sangramraje Deshmukh | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 8. | Mr. Suyash Lokhande | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 9. | Mr. Omkar Khattri | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 10. | Mr. Abhishek Chikate | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 11. | Mr. Abhishek Lad | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 12. | Mr. Shailesh Yadav | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 13. | Miss. Ankita Potdar | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 14. | Mr. Ayush Ambre | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 15. | Mr. Chaitanya Kurkure | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 16. | Mr. Rahul Dambre | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 17. | Mr. Aman Chauhan | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 18. | Mr. Naykodi Harshal | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 19. | Mr. Rutvik Mutkule | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 20. | Mr. Kaustubh Atkire | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 21. | Mr. Tushar Thokal | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 22. | Mr. Swapnil Kakade | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 23. | Mr. Mangesh Walekar | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 24. | Miss. Monika Aare | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 25. | Miss. Saniya Mulla | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 26. | Mr. Abhishek Deshmukh | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 27. | Mr. Hankare Varshiket | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 28. | Mr. Babalu Meher | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 29. | Mr. Chaitanya Shinde | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 30. | Mr. Saurabh Bhondave | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 31. | Mr. Swapnil Chandole | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 32. | Mr. Prathmesh Narale | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 33. | Mr. Magardhwaj Biradar | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 34. | Mr. Girish Allampallewar | Marathwada Mitra Mandal's Institute of Technology, Pune |





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| Sr. No. | Name of Participants | Institute |
|---------|-------------------------|---|
| 35. | Mr. Prathamesh Deshmukh | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 36. | Mr. Amit Jadhav | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 37. | Mr. Sandip Jagadale | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 38. | Mrs. Anjali Joshi | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 39. | Mr. Nishad Jog | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 40. | Mr. Swapnil Kakade | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 41. | Mr. Vishal Kulkarni | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 42. | Mr. Sachin Mutalikdesai | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 43. | Mr. Umesh Patil | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 44. | Mr. Rohit Polas | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 45. | Mr. Akshay Shinde | Marathwada Mitra Mandal's Institute of Technology, Pune |
| 46. | Mr. Tushar Edake | ISBM College of Engineering, Nande, Pune |
| 47. | Mr. Naren Kate | V.I.I.T., Pune |
| 48. | Mr. Vidyanand Galphade | ELCA Quality Systems and Calibrations Pvt Ltd., Pune |
| 49. | Mr. Umesh Patil | D N Patel College of Engineering, Shahada |
| 50. | Mr. Kumar Kumarappan | VSB College of Engineering Technical Campus |
| 51. | Mr. Vaibhav Edake | ISBM College of Engineering, Nande, Pune |
| 52. | Mr. Umesh Uddhav Patil | D N Patel College of Engineering, Shahada |
| 53. | Mr. Chandrakant Khemkar | ISBM College of Engineering, Nande, Pune |
| 54. | Mr. Krishna Yadav | ISBM College of Engineering, Nande, Pune |
| 55. | Mr. Nilesh Patel | D N Patel College of Engineering, Shahada |
| 56. | Mr. Amit Mogale | JSW steel ltd. |
| 57. | Dr. P. Saravanan | SAIL |
| 58. | Mr.Pravin Kulat | Triveni |

Prof. Amol Bhanage
Coordinator



Prof. Sudhir More
HoD, Mechanical Engg.

