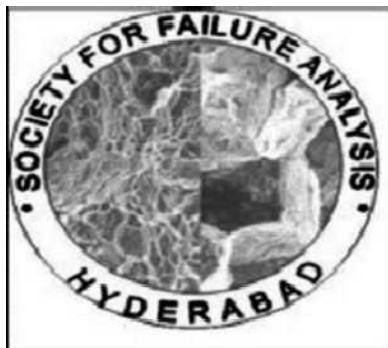




SFA Newsletter

Seasons Greetings!

[About SFA](#)

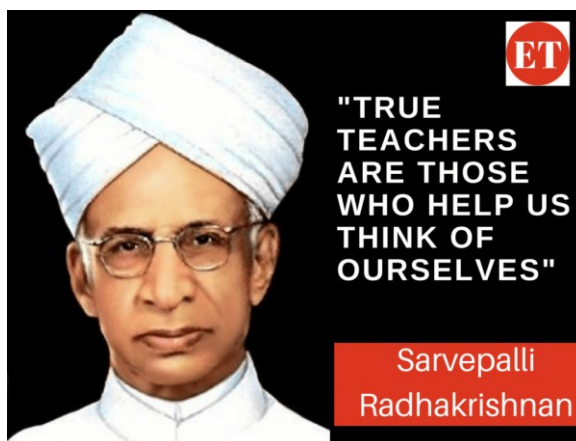
[Objectives](#)

[Local chapter](#)

Welcome you all to join as members of SFA! Please find the membership form inside; kindly fill in and contact Secretary of SFA through email.

Experts and experiences:

[Sri.C.N.Venkiteswaran, IGCAR](#)



Message from our President

Dear readers,

Warm season's greetings! The month September marks respect to our teachers! Great teacher of the soil Dr. Sarvepalli Radhakrishnan (former President of India) who is being remembered recognizing the excellence shown towards education. He believed "Education is the manifestation of perfection already in men". Learning is a lifelong pursuit and our excitement & eagerness to learn should continue. Going by this, on behalf of SFA, I urge every SFA member to work hard towards achieving this goal of perfection which in, other words, help in preventing immature failures of engineering components. We have successfully conducted Bridge Course for Young engineers, revived students activities and released the proceedings of ICONS-2018. It is a very happy moment that we are rolling out the 21st issue of our Newsletter. I congratulate all the contributors for their articles.

We have lined up several technical events such as Clinic on Failure Analysis, AGM, National Awards and National Conference on Failure Analysis and initiated efforts to involve all Chapters of SFA. Given the above optimistic happenings, let us pursue our vision with sustained initiatives, persistence and efforts to enable SFA to achieve much greater heights in the coming years.

Best wishes to all the readers!



Dr. B P C Rao
President, SFA

B P C Rao

From the Desk of Editors

Dear readers:

You are browsing through the 21st issue of the Newsletter of Society for Failure Analysis (SFA).

We solicited articles for the current issue from failure analysis experts of our country who had worked on many case histories. In this respect, defining failure of a component as non performance, possibly due to continued exposure to aggressive environment, an article on post-irradiation examination of structural materials was contributed by Sri.C.N. Venkiteswaran, Head, FCS, PIED, IGCAR, Kalpakkam. Hope you would find this article interesting. We thank the author who made this interesting contribution.

As far as events are considered, we have two events to report this time- we have provided a glimpse of farewell to Sri P Jayapal, former President which was held at Bangalore along with the 13th EC meeting.

The annual event Bridge Course on NDE & QA in memory of Dr.Baldev Raj which was initiated by SFA along with ISNT Chapter was completed and the inaugural function photo added in the pages of the current issue.

We take this opportunity to appeal to the Indian industry to use SFA as a forum to share their experiences on trouble shooting. A great way to add content to this newsletter is to include a calendar of

upcoming events. The details of important forthcoming international and national events are included; so also the books recently published on the topics of the subject.

We value your comments, which really boost our enthusiasm to perform better. Therefore, as always, your views and comments, mailed to swati@gtre.drdo.in or param@igcar.gov.in are welcome. We wish you all free from failures and a joyful life!

You may visit our web site for your comments/suggestions or info on membership: www.sfaindia.org

30-09-2019 (P .Parameswaran
& Swati Biswas)
Editors



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Editors of Newsletter:

Dr.P.Parameswaran, IGCAR
 Dr.Swati Biswas, GTRE

Aims and Objectives of Society for Failure Analysis

The aims and objectives of the Society shall be:

To serve as National Society to promote, encourage and develop the growth of "Art and Science of Failure Analysis" and to stimulate interest in compilation of a database, for effective identification of root causes of failures and their prevention thereof.

To serve as a common forum for individuals, institutions, organizations and Industries interested in the above.

To disseminate information concerning developments both in India and abroad in the related fields.

To organize lectures, discussions, conferences, seminars, colloquia, courses related to failure analysis and to provide a valuable feed back on failure analysis covering design, materials, maintenance and manufacturing deficiencies / limitations.

To train personnel in investigation on failures of engineering components and their mitigation.

To identify and recommend areas for research and development work in the Country relating to failure analysis.

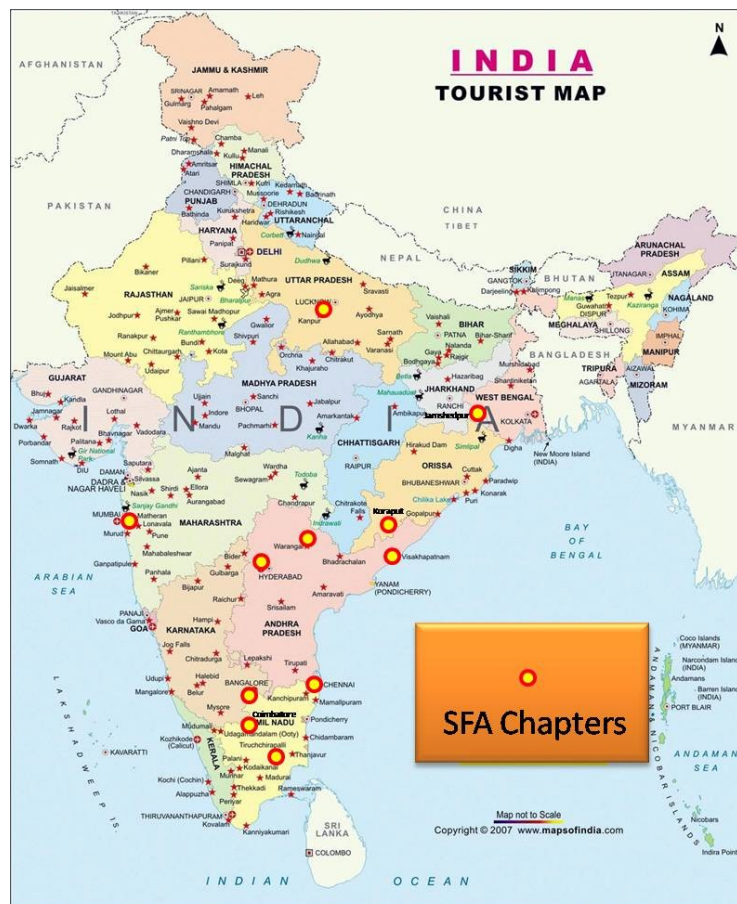
To establish liaison with Government, individuals, institutions and commercial bodies on failure analysis, methodologies and to advise on request.

To cooperate with other professional bodies having similar objectives.

To affiliate itself to appropriate international organization(s), for the promotion of common objectives and to represent them in India.

To organize regional chapters in different parts of the country as and when the need arises.

To do all such other acts as the Society may think necessary, incidental or conducive to the attainment of the aims and objectives of the Society.





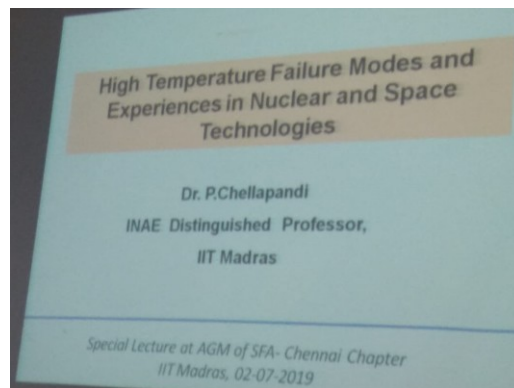
Annual General Body Meeting by SFA Chennai Chapter on 2nd July 2019

SFA Chennai Chapter conducted a Special Technical Lecture along with its 7th Annual General Body Meeting on 2nd July 2019 at IIT Madras.

On this day, a Special Technical Lecture on “High Temperature Failure Modes and Experiences in Nuclear and Space Technologies”, by Dr. P. Chellapandi, INAE Distinguished Professor, IIT Madras & Former Project Director, BHAVINI, Kalpakkam was very

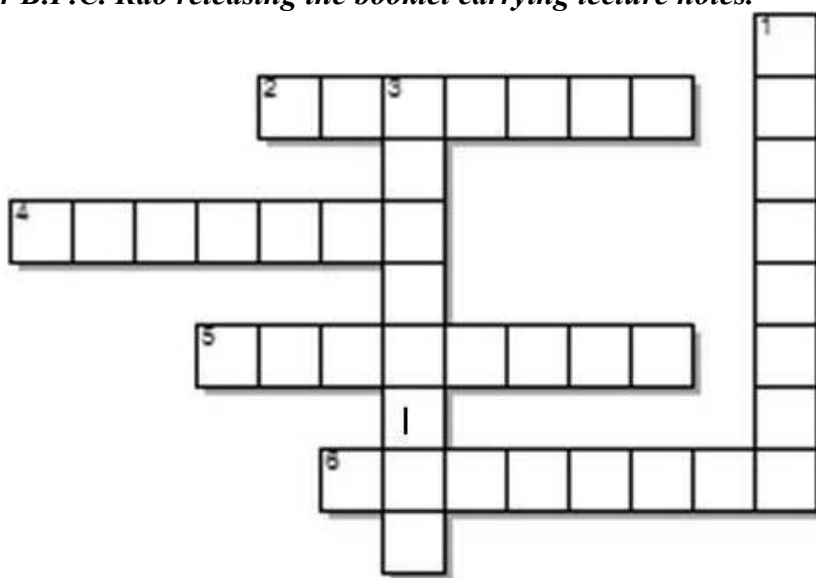
well attended by the members who interacted very well with the speaker and in the end, the speaker was honoured with a memento by Prof Raghu Prakash, Chairman, SFA Chennai Chapter.

The subsequent AGM had presentation by secretary and treasurer to the general body. The AGM ended with a dinner.





SFA and ISNT jointly organised the BRM-BCNQ-2019 for the benefit of scholars drawn from different institutions. Photograph taken during the inauguration where Dr.C.K. Mukhopadhyay, Dr.G. Amarendra, Dr. A. Ravishankar and Dr B.P.C. Rao releasing the booklet carrying lecture notes.



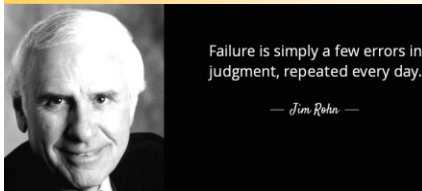
- 1D) Disappear in liquid [8]
- 2A) Layering for wear prevention [7]
- 3D) Scuffing on surface [8]
- 4A) Resist climate [7]
- 5A) Bursting nature of vapour [8]
- 6A) Exploding [8]



13th Executive Council meeting and Farewell to Sri P Jayapal, former President of SFA at Bangalore

Sri P Jayapal former President of SFA and Chief executive, CEMILAC, Bangalore was given a farewell by Executive Council meeting on 28th August 2019 at VIP Hall in DROMI, C V Raman Nagar, Bangalore. On the occasion, President of SFA, Dr B P C Rao and the other council members graced and extolled the achievements of Sri Jayapal and the personal interactions of great

motivation he had sustained throughout his tenure with all the members which helped SFA to grow in various dimensions. It was during his tenure, he took initiative and introduced the award function to honour the failure analysts of the country. Further, he contributed to the growth of Society by encouraging few chapters to be opened up. Some of the photos taken during the event are shown below:



Above: Honoring former President, Sri.P Jayapal (seated) for his fine contributions to SFA by President, Dr B P C Rao offering him a shawl, a turban and a memento. Below: Group Photo with members





NCFA(ES)2020

National Conference on Failure Analysis of Engineering Structures (NCFA(ES) 2020) aims to bring together leading researchers, scientists, users and research scholars to exchange and share their experiences and research outcomes on all aspects of Engineering Failure Analysis. It will provide an excellent interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent trends, innovations, ideas, challenges encountered and solutions adopted in the domain of Engineering Failure Analysis.

About SFA

Society for Failure Analysis was formed to serve as National Society to promote, encourage and develop the growth of "Art and Science of Failure Analysis" and to stimulate interest in compilation of a database, for effective identification of root causes of failures and their prevention thereof. The patronage of the society from many stalwarts set the progress of the society in achieving its ambitions and goals-viz.- achieving safer and stipulated service life of components in various industries. The society conducts lecture series, annual meetings, workshops, and clinics on various aspects of failure analysis and bring out a quarterly newsletter. Please visit SFA-India website (www.sfa-india.org) for more information.

About Bengaluru

Bengaluru, famously known as 'silicon valley of India' 'aviation hub of India' Karnataka. It has a pleasant weather all throughout the year.



**LEARNING IS NEVER
DONE WITHOUT
ERRORS AND DEFEAT**

Exhibition Pavilion

The exhibition will offer the opportunity for industries & equipment manufacturers related to material characterization and failure analysis tools to showcase their products and services to a specialist audience gathered the conference. The conference venue provides adequate resources for the exhibition. The details will be uploaded in the conference website soon.

Sponsorship & Opportunities

Associated industries and institutions are requested to support NCFA(ES) 2020 by sponsoring the conference events. Depending on the nature of sponsorship, the conference will provide any or a combination of business opportunities which include complimentary registration, business publication in the conference kit, company logo in conference documents, website and at the venue, complimentary pages in the souvenir and complementary stall at the exhibition. The details will be posted in the conference website soon.

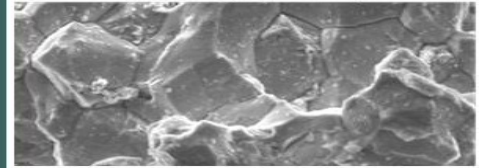
Registration Information (Excluding GST)

Important Dates

Online Abstract submission	January 15, 2020
Acceptance notification	February 15, 2020
Full length paper submission	March 15, 2020
Communication of review outcome of manuscripts	April 15, 2020
Submission of revised manuscripts	April 30, 2020
Pre-conference Workshop	July 9, 2020
Conference dates	July 10-11, 2020

July 9-11 2020

National Conference on Failure Analysis of Engineering Structures (NCFA (ES) 2020)



Organized by
Society for Failure Analysis
Gas Turbine Research Establishment
CSIR-National Aerospace Laboratories
Hindustan Aeronautics Limited
Centre for Military Airworthiness & Certification



HAL Convention Hall, Bengaluru,
India

Call for Contributions

300-400 words (text only) abstracts clearly indicating the work carried out and salient results are invited in the subject areas listed below-

Relevant Topics

- Engineering failure modes for metallic and non-metallic engineering materials
- Approaches to failure analysis
- Role of service loading in failure analysis
- Case studies of failures in industry sectors such as aerospace & missiles applications, marine and offshore, automotive, rail, power generation, mining and minerals, armour, armaments, and combat vehicles, manufacturing and production etc.
- Structural and architectural failures
- Failure analysis and joining technologies
- Role of condition monitoring and NDT in failure avoidance
- Failure analysis, maintenance and reliability
- Role of failure analysis in the design process
- Training and accreditation in failure analysis research and industry
- Role of condition monitoring and signal processing in engineering failure analysis

Authors of accepted abstracts will be invited to submit (up to a maximum of) eight page full length manuscript. The template for extended abstract and full length paper will be available in the website.

Conference Structure

Conference is structured with keynote address, plenary and invited lectures apart from contributed papers from researchers as Podium / Poster presentations. Oral presentations would be in parallel sessions and major talks would be held at the main auditorium.

Conference Presenter's Policy

At least one author of the paper is expected to register and participate in person to present the paper. No presenter can present more than two papers accepted for this conference.



Failure analysis of radioactive components & Post Irradiation Examination

¹C.N. Venkiteswaran and ²R. Divakar

^{1,2}Post Irradiation Examination Division, Materials Engineering Group,
Metallurgy & Materials Group, Indira Gandhi Centre for Atomic
Research,

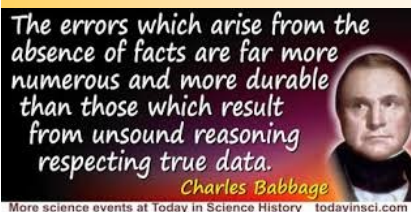
²Professor, Homi Bhabha National Institute
Kalpakkam – 603102

Failure analysis of engineering components is carried out to find out the root cause of failure and recommend remedial measures to prevent its recurrence. Various examinations such as non-destructive evaluation techniques, optical microscopy, electron microscopy and microanalysis, mechanical testing etc are carried out sequentially to obtain the evidences of deterioration of the component during service and thereby arrive at the failure mechanism. All the above investigations are typically carried out in a conventional metallurgical laboratory. What if the failure occurs in a component used in nuclear industry? In many cases, the components used in a nuclear facility become radioactive due to its proximity to the various systems associated with nuclear reactor or other radioactive facilities. Handling of radioactive components for any failure investigation requires specialized facilities such that the operators handling the components are protected from the adverse effects of radioactivity.

personnel from intake of radiotoxic material and exposure to penetrating radiation. Depending on the intensity of radiation and radio-toxicity of the material handled, either of the above facilities are used. These facilities are provided with physical and dynamic barriers, which establish the containment necessary to provide adequate radiological protection to operating personnel and prevent release of radioactivity to the environment. Low-level beta and gamma-emitting materials are handled inside fume hoods, whereas glove boxes, which have highly leak-tight containment, are used for handling highly radiotoxic and reactive materials such as Plutonium. Fig. 1 shows a glove box used for handling radioactive material. All the facilities mentioned above where radioactive material is handled are provided with dynamic ventilation system such that they operate at a negative pressure (- 25mm of water column) to prevent any transport of radioactive particulates to the operating side.

Facilities used for the safe handling of radioactive materials are fume hoods, glove boxes and shielded facilities to protect the

When a component is in service within the core of a nuclear reactor, they acquire induced



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radioactivity by transmutation. In the case of nuclear fuel, a host of fission products are generated which are highly radioactive. Examination of such components requires shielded enclosures called “hot cells” and such examinations are known as “Post Irradiation Examination”. In a hot cell, shielding from penetrating gamma radiation is achieved by using high-density materials such as concrete, steel or lead in the walls of the enclosure. In the nuclear industry, hot cells are employed for post irradiation examination of irradiated fuel and structural materials, reprocessing of spent fuel, high level waste management, processes for radioisotope separation and other radiation research work. Several cells, approximately the size of a room, are constructed modularly, with

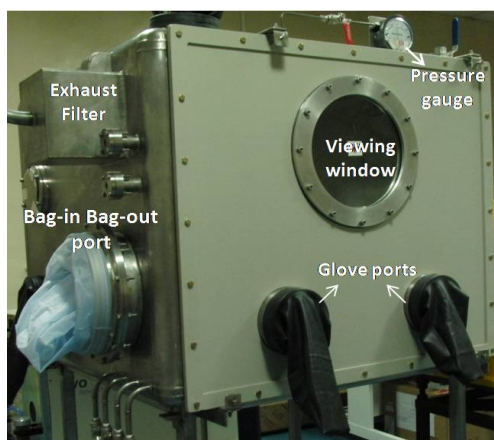


Fig.1. Photograph of a glove box typically used for handling radioactive material

each module having its own design features. Hot cells are provided with viewing devices such as radiation shielding windows, periscopes and radiation resistant cameras. Fig. 2 shows a typical hot cell with remote handling and viewing devices. Hot cells are glove boxes are provided with provisions to receive and dispatch radioactive material in a leak tight manner. All the operations / examinations inside the hot cell are carried out using remote handling devices. All the necessary equipment required for the examinations are established inside the “hot cell”. Walls of the enclosure are provided with sealed penetrations to route cables from the equipments housed inside to the control units kept in the operating side such that the electronics in the control unit are not subjected to radiation damage.

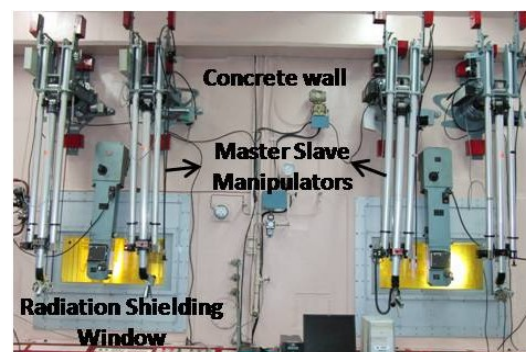


Fig.2. Photograph of a concrete shielded hot cell with remote handling and viewing devices





Post irradiation examination (PIE) plays a crucial role in the nuclear fuel cycle for understanding the in-reactor behavior of fuel and structural materials. It gives valuable feedback to the fuel designers, fabricators and reactor operating personnel leading to enhanced safety, improved design specifications and reactor operating procedures thereby enhancing the useful life of reactor components. PIE also enables validation of models which were used in the design of the fuel. PIE assumes greater importance due to the increasing demands on the fuel and the structural materials to extract maximum energy from the fuel element which are subjected to rigorous environment of high temperature and neutron irradiation. Various physical, metallurgical and chemical methods are employed for complete characterization of irradiation behaviour of fuels and structural materials. Such examinations can be carried out within the reactor (in-pile) using instrumented irradiation capsules to obtain limited data. More commonly, such examinations are carried out in out-of-pile facilities such as reactor pool or in shielded facilities like hot cells.

Hot cell facilities have been established in the research centres of Department of Atomic Energy for performance evaluation of fuels and structural materials from the various

operating nuclear reactors in India. In Kalpakkam, a hot cell facility is operating adjacent to the Fast Breeder Test Reactor (FBTR). This facility has seven concrete shielded hot cells which are provided with inert atmosphere ventilation system to handle and examine mixed carbide of Uranium and Plutonium, the fuel used in FBTR, which is pyrophoric and reactive in nature. Various post irradiation examinations such as dimensional measurements on the irradiated components, nondestructive and destructive examinations such as leak testing, eddy current testing, X-radiography, Neutron radiography, gamma spectrometry, metallography, mechanical testing, etc. are carried out in the hot cells. A 30 KWt swimming pool type reactor (KAMINI) has been installed below the hot cells for neutron radiography of the fuel subassembly, fuel pins and control rod assembly.

The above examinations provide valuable information on various aspects such as swelling of fuel due to fission products, fission gas release, microstructural changes, mechanical property degradation of structural materials etc [1,2,3]. The results of the various examinations are carefully correlated and analyzed to obtain the irradiation behavior of the component. Any failure of the fuel is investigated in the hot cells to arrive at the root cause of failure and suggest remedial





measures to prevent its recurrence [3,4].

References:

- 1) Fission product and swelling behaviour in FBTR mixed carbide fuel, C.N.Venkiteswaran, V.V. Jayaraj, B.K. Ojha, M. Padalakshmi, C. Padmaprabu, V. Anandaraj, T. Saravanan, Ran Vijay Kumar, V. Karthik, A. Vijayaraghavan, T. Johny, Divakar R., B.P.C. Rao, Jojo Joseph, Proceedings of International Conference on Fast Reactors and Related Fuel Cycles (FR-17), 2017.
- 2) Evaluation of Fuel-Clad Chemical Interaction in PFBR MOX fuel pins, V.V. Jayaraj, S. Thirunavakkarasu, V. Anandraj, Bijay Kumar Ojha, Ran Vijay Kumar, S. Vinodkumar, M. Padalakshmi, C. Padmaprabu, C.N. Venkiteswaran, V. Karthik,

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3) Real time X-ray Imaging of Fuel Clad Ballooning and its microstructural investigations, IGCAR Annual report - 2018.

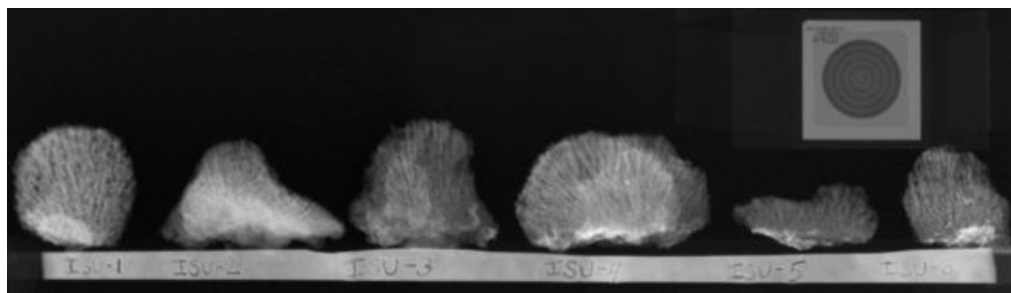
4) Failure Analysis of Electronic Boards for Neutron Instrumentation Chassis of KAMINI, IGCAR Annual report – 2018.

5) Investigation of failure of high burn up carbide fuel pin of FBTR through post-irradiation examination, V. Karthik, Ran Vijay Kumar, V.V. Jayaraj, V. Anandraj, B.K. Ohja, C. Padmaprabu, A.Vijayaragavan, T. Ulaganathan, C.N. Venkiteswaran, Shaji Kurien, T. Johny, R. Divakar, Jojo Joseph, S. Venugopal and T. Jayakumar, Proceedings of the Annual meeting of Hot laboratories and remote handling, HOTLAB 2015, Leuven, Belgium, Oct 2015.

Researchers use neutron radiography to detect pollution in sea sponges

<https://inl.gov/article/neutron-radiography/>

litbit



The neutron radiographs show more internal details of the sponge's structure, including possible cadmium contamination.





Understanding Failures in Engineering Materials-UFEM 2019 At Thiagarajar college of Engineering, Madurai during 07-09, Nov. 2019

REGISTRATION FORM

Registration Fee
 Faculty members - Rs. 1000
 Research Scholars/Students - Rs. 500
 Industry Persons - Rs. 2000
 Submit a DD in the form of crossed demand draft drawn in favor of "The Principal, Thiagarajar College of Engineering", payable at Madurai.

Important Dates
 Submission of Registration form : 25.10.2019 on or before
 Intimation of Selection (by Email) : 28.10.2019
 Confirmation by Participants : 31.10.2019

**Address for mailing the registration
 Convener UFEM2019**

Dr. V. Gayathri,
 Nano Materials Research Lab,
 Department of physics, TCE, Madurai
 Phone: 0452-2482240 (722)
 Mobile: 9940922541
 E mail: vgphy@tce.edu

Contact Nos
Dr. M. Senthamizhselvi,
 Mobile: 9443303778
Dr. A. L. Subramanian,
 Mobile: 9487135464

Thiagarajar College of Engineering
3 Days National Level Workshop on
"Understanding Failures in Engineering Materials"
07-09, November 2019

Name (In Block Letters):
 Designation :
 Department :
 Name of Institution / Industry
 Mailing Address :
 Phone No & Email :
 Area of interest :
 Experience (in years):

Academic	Industry	Research	Total

Accommodation required: ☐ Yes ☐ No

DD. Details

Amount: Date: DD. No:
 Bank:

DECLARATION:

The above information is true to the best of my knowledge. I agree to abide by the rules and regulation governing the workshop.

Date: Signature of the Participant
 Place:

Signature & seal of the Sponsoring Authority



DST-SERB, BRNS Sponsored
3 Days National Level Workshop on
"Understanding Failures in Engineering Materials"

07-09, November 2019



Organized by
Department of Physics

Thiagarajar College of Engineering
Madurai – 625 015
www.tce.edu

In Association with

Society for Failure Analysis (SFA)
Hyderabad



Convener
Dr. V. Gayathri

Coordinators
Dr. S. Rajathi
Dr. M. Senthamizhselvi
Dr. A. L. Subramanian

Thiagarajar College of Engineering

Thiagarajar College of Engineering (TCE), Madurai is a Government aided ISO 9001:2008 certified Institution, affiliated to Anna University. TCE is one among the several educational and philanthropic institutions founded by Philanthropist and Industrialist Late. **Shri. Karumuttu Thiagarajan Chettiar**. TCE was established in the year 1957 and granted Autonomy in the year 1987. TCE is funded by Central and State Governments and Management. TCE has been accredited by the National Board of Accreditation in the years 1998, 2005, 2014 and 2016. TCE offers eight undergraduate programme, thirteen Postgraduate programs and doctoral programs in Engineering, Science and Architecture. TCE is one of the recognized QIP centers from 2012 onwards.

About the Department

Physics department was established in the year of 1957. Department of physics in collaboration with other engineering department of TCE offers Ph.D programme in various specialization such as Smart Materials, Thin Film Materials and Nano Materials. The Department is supported by FIST programme of DST, New Delhi. The department also collaborates with industries, academic and professional bodies and actively engaged in many technology development sponsored project from BRNS, MNRE, DRDO, DST, ISRO, CSIR and AICTE.

Society for Failure Analysis

SFA was formed amongst the failure analysts of our country following the efforts seeded during NCFA 2006 at Hyderabad. The Society has patronage of many stalwarts which has set the progress of the Society in achieving its ambitions and goals-viz., achieving safer and stipulated service life. Membership details: www.sfaindia.org

UFEM 2019 Programme

Materials 'role in all types of engineering industries is vital. Although a wide variety of materials are available

in nature or man made through synthesis or alloying, the materials' choice for any application is done based on analysis of Physical, Mechanical, Chemical and Thermal properties. When the chosen Material is converted into an engineering product, the manufacturing route introduces many dimensions of defects which can cause a failure immediately during the manufacture or later during service. The workshop focuses on bringing out the physics behind the engineering failures which would go a long way in designing systems successfully with expected sustainability and reduce premature failures.

In this workshop several eminent experts with large experience in the above domains will be delivering talks that deal on the above aspects.

Resource Persons

- Prof. Raghu Prakash, IIT Madras.
- Prof. Ganesh Sundararaman, IIT Madras.
- Dr. Swati Biswas, GTRE, Bangalore.
- Dr. B P C Rao IGCAR, Kalpakkam.
- Prof N. Murugan, PSG Tech., Coimbatore.
- Prof V. Balasubramanian, Annamalai Univ.
- Dr B. Venkatraman, DMRL, Hyderabad
- Dr. P. Parameswaran IGCAR, Kalpakkam

Contents of the Workshop

- Fracture of engineering components
- Cyclic loads and fatigue endurance
- Aero engines and failures- materials and manufacturing issues
- In service surveillance through NDT
- Physics of failures in weldments
- Failures in automotive components

Student Awareness Program

Lectures and Quiz will be conducted exclusively for the students to create awareness among the younger generation on the materials quality for industrial applications.

Participants Eligibility

- Faculty members/Research scholars working in Engineering/Polytechnic /Arts and Science Colleges and University departments
- R&D Organization , Professionals from Industries

Selection Norms

Selection of the participants will be based on first come first serve basis. The coordinators decision will be final in selection of participants.

Accommodation and Boarding

Outstation faculty should make their own arrangement. However few rooms in Men's and ladies hostel will be given on payment basis.

Organizing Committee

Chief Patron

Mr. Karumuttu T. Kannan
Chairman & Correspondent

Patron

Dr. V. Abhaj Kumar
Principal

Mentors

Dr. Palaninatha Raja Dean P&D
Dr. R. Vasuki HoD, Department of Physics.

Organizing Team

Dr. N. Sankarasubramanian
Mr. Y. Veeraganesan
Dr. A. L. Subramanian
Dr. D. Ravidran
Mr. B. Shenbagabalakrishnan
Mr. B. Karuppasamy





Society for Failure Analysis

Application Form

Society for Failure Analysis
C/O Centre for Military Airworthiness &
certification, RCMA (Materials)
Hyderabad 550 058

Phone: 040-24340750; 24348377;
Fax: 040-24341827
E-mail: rdrcma.mat@cemilac.drdo.in

Affix your
passport size
photo

Please ✓ applicable

student member ☐Life Member ☐1. Name in Block Letters

First Middle Last

2. Date of birth

3. Father's Name/ Husband's Name

4. Present Occupation / Designation and office address:

Phone:

A

F

E

5. Academic & Professional Qualifications:

6. Home address:

Phone:

Mobile:

Fax:

E-mail:

6. Address for correspondence:

Office ☐Home ☐

7. Professional Experience:

8. Endorsement by SFA Member

Name

Membership No.

Signature

9. Primary Field of Interest: (please mark 1,2,3 in the in order of preference)

Strategic ☐	Power ☐	Foundry ☐	Welding ☐	Heavy Industry ☐	Transport ☐
Design & Failure ☐	Quality control ☐	Petrochemical ☐	Consultancy / services ☐	Materials and manufacturing ☐	Education ☐

10. Name of the Chapter you intend to be attached
(Please refer to Chapters' list)

11. Subscription details:

Payment should be made by cheque / DD favoring "Society for Failure Analysis"; p
cheques not accepted.

Amount

Rs.

Cheque ✓ / D.D. No

Dated

Bank Name

Branch

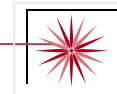
Category	Amount Payable		
		One time Subscription	Total on joining
Student Member		Rs 200/-	Rs. 200/-
Life Member		Rs 2000/-	Rs. 2000/-

12. Declaration by the applicant

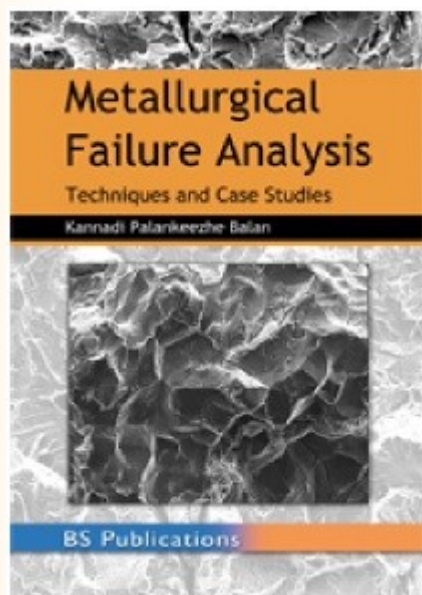
If elected, I agree to accept to pay the prescribed yearly subscription, to abide by the Articles of Association of the Society and to promote its aims and objects.

Signature of the Applicant

Office Use Only					
13.	Membership No.		Date of Enrolment		Chapter
	Amount Paid (Rs)		Receipt No. / Date		



Books



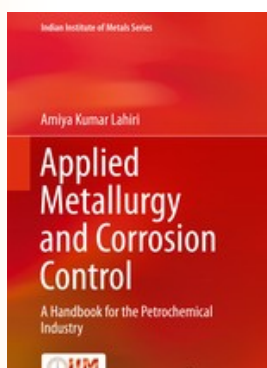
About the Book:

Metallurgical Failure Analysis-Techniques and Case Studies explores how components fail and what measures should be taken to avoid future failures. The book introduces the subject of failure analysis; covers the fundamentals and methodology of failure analysis, including fracture and fractography of metals and alloys and the tools and techniques used in a failure investigation; examines 41 case studies on high performance engineering components; features experimental results comprised of visual-, fractographic-, and metallographic-examination, hardness measurements and chemical analysis; includes illustrations and evidence obtained through test results to enhance understanding; and suggests suitable remedial measures when possible,

The various case studies are classified according to the major causes of failures. The case studies pertain to: Improper Material Selection, Manufacturing Defects, Casting Defects, Overload, Fatigue, Corrosion Induced Failures, Hydrogen Embrittlement and Stress Corrosion Cracking, Wear and Elevated Temperature Failures. The book contains information gathered over three decades of the author's experience handling a variety of failure cases and will go a long way toward inspiring practicing failure analysts. The book is designed for scientists, metallurgists, engineers, quality control inspectors, professors and students alike,

Applied Metallurgy and Corrosion Control

A Handbook for the Petrochemical Industry



This book serves as a comprehensive resource on metals and materials selection for the petrochemical industrial sector. The petrochemical industry involves large scale investments, and to maintain profitability the plants are to be operated with minimum downtime and failure of equipment, which can also cause safety hazards. To achieve this objective proper selection of materials, corrosion control, and good engineering practices must be followed in both the design and the operation of plants. Engineers and professional of different disciplines involved in these activities are required to have some basic understanding of metallurgy and corrosion. The book first covers different metallic materials and their properties, metal forming processes, welding, and corrosion and corrosion control measures. This is followed by considerations in material selection and corrosion control in three major industrial sectors, oil & gas production, oil refinery, and fertilizers. The importance of pressure vessel codes as well as inspection and maintenance repair practices have also been highlighted. The book will be useful for technicians and entry level engineers in these industrial sectors. Additionally, the book may also be used as primary or secondary reading for graduate and professional coursework.





Events in the pipeline



ICEFA 2019 : International Conference on Engineering Failure Analysis, France, October 29 - 30, 2019

ICEFA 2020

Ninth International Conference on Engineering Failure Analysis will be held in Shanghai, China from 12-15 July 2020

Abstract submission deadline:

13 December 2019

Supporting publication

Engineering Failure Analysis

This series of biennial conferences has become an important venue for practitioners and academics from around the world to meet, discuss topics associated with the field of engineering failure analysis and to swap stories about interesting engineering failures. This is only the second time we have held the conference outside of Europe and we are very excited to be working for the first time with the Chinese Failure Analysis Institution.

Answers to cross word:

1D) Disappear in liquid [8]

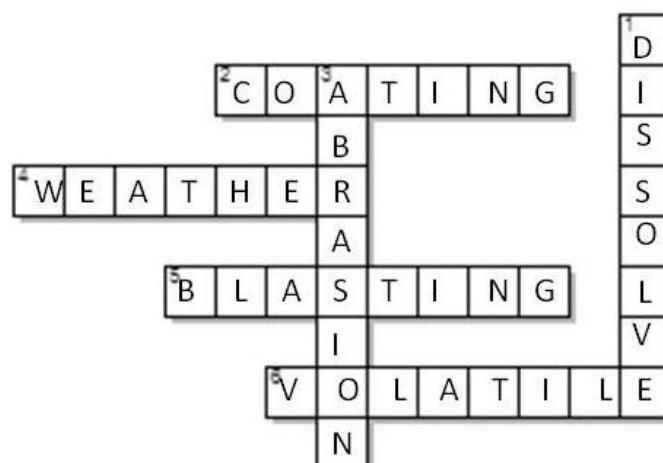
2A) Layering for wear prevention [7]

3D) Scuffing on surface [8]

4A) Resist climate [7]

5A) Bursting nature of vapour [8]

6A) Exploding [8]





(Regd. No. 97/2008)

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[illegible]

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sz-mid@ymail.com

Website: www.S2m12.com

Dated: 21/10/2019

SFA Awards (2018-2019)

Dear Sir/Madam,

Subject: Notification for Nominations for SFA Awards – Reg

In order to recognise and honour scientists, engineers and academicians who have made significant and excellent contributions to the field of failure analysis, SFA presents awards. We are happy to announce notification for receiving nominations from individuals for the year 2018-2019 for the following categories of awards:

- ✓ SFA Lifetime Achievement Award 1
- ✓ SFA National Failure Analyst Award 2
- ✓ SFA Young Failure Analyst Award 1
- ✓ SFA Best Paper Award 2

Details with respect to above awards, eligibility, nomination form, supporting documents, citation, etc. are placed on the SFA website. The nominations will be scrutinized by an eminent panel of judges and the awards will be bestowed during annual event of our Society.

Members of SFA are requested to give wide publicity to this notification and are encouraged to send nominations to the undersigned in a sealed cover on or before 30th November 2019 to the Secretary's address.

Thanking you and with best regards,

(P. Parameswaran)

To

All EC members
All Chapter Chairmen

Society for Failure Analysis (SFA), Hyderabad

[Details on awards 2018-19 and eligibility](#)

- Awardees should be a member of SFA at least for three years
- With reference to the year of announcement ending Dec 31st, the awardees should be:
 - ✓ minimum age for Lifetime Achievement Award: 60 years
 - ✓ minimum age for National Failure Analyst Award: above 35 and upto 55 years
 - ✓ maximum age for Young Failure Analyst Award: 35 years
- Best paper in journal appearance for the year until Dec 31st
- Awards are considered for nominations for 3 consecutive years only
- Nominations are to be submitted in the following format with necessary enclosures

Form for Nominations: SFA Awards

(To be submitted in 5 copies with two latest colour photographs)

1	Award category name	
2	Name of nominee	
3	SFA membership number	
4	Date of birth or Age as on 31 st Dec of the year of application	
5	Present address along with contact e-mail & phone no.	
6	Pan Card number	
7	Bio-data of nominee (Not more than 300 words)	
8	Academic qualification (UG degree to upper most)	
9	Professional experience	
10	Special achievements in confirmation of awards requirements (not more than 200 words)	
11	Sponsored by Head of Institution or Chapter Chairman (with respect to above point no 10)	
12	Awards/honours/recognitions/Specific contributions to SFA	
13	Proposed 2 referees along with their address and contact phone number and e-mail	
14	Any other information of significance towards award	
15	A brief citation for the award (not more than 50 words (for reading during award ceremony, if selected)	

I certify that information above submitted for SFA Award nomination is correct to the best of my knowledge.

Place

Date _____

(Signature of Nominee)



Events by SFA

- 1) Understanding failures in Engineering materials, UFEM-2019, @ Tyagarajar College of Engg., Madurai, Nov, 7-9, 2019
- 2) National conference on Failure Analysis –Engineering structures (NCFA (ES)-2020): 10-11, July 2020; HAL Convention Hall, Bengaluru.
- 3) One day workshop on Engineering Failure Analysis, Dec 01, 2019 at IE Hall, Bhopal
- 4) Clinic on Failure Analysis- Dec 2019, Anna University, Chennai, 13-14, Dec 2019
- 5) Engineering Failures- Characterisation & Prevention" @ IIT Kharagpur, Date and venue to be announced.

We are on the Web now!
Please visit www.sfaindia.org

For Private circulation only



To

From
Society for Failure Analysis (SFA)
C/O Centre for Military Airworthiness &
Certification, RCMA,
Kanchanbagh
Hyderabad-550058