

# 16<sup>th</sup> International Conference on Creep and Fracture of Engineering Materials and Structures (CREEP 2024)

## Technical Schedule

28<sup>th</sup> July 2024 (Sunday)

4:30 – 6:30 PM Welcome and Registration (Foyer, J N Tata Auditorium)

29<sup>th</sup> July 2024 (Monday)

Inauguration: 09:15-09:45 AM (Main Hall, JN Tata Auditorium)

<b>Plenary (Main Hall)</b>	09:45- 10:30 AM	<b>Gunther Eggeler</b> <i>Lattice misfit and the mechanism of high temperature and low-stress creep of Ni-base single crystal superalloys</i> Chair: Vikram Jayaram		
	<b>High Tea: 10:30-10:55 AM</b>			
		Hall - A Chair: Ravishankar Kottada	Hall – B Chair: Koteswararaj Rajulapati	Hall – C Chair: T A Abinandanan
<b>Keynote</b>	10:55- 11:30 AM	<b>Steffen Neumeier</b> <i>Localized phase transformation strengthening during creep of complex CoNiCr-based superalloys</i>	<b>Rahul Mitra</b> <i>High temperature deformation and damage mechanisms of ultra-high temperature ceramic composites</i>	<b>S. Karthikeyan</b> <i>Multiscale modeling of high temperature deformation of Co-base superalloys</i>
<b>Invited</b>	11:30- 12:00 PM	<b>Boopathy Kombaiah</b> <i>Grain boundary segregation behavior in Ni and Fe based alloys during diffusional creep</i>	<b>Pradipta Ghosh</b> <i>Role of phase stability on strengthening in Multicomponent alloys</i>	<b>Ilaksha Adlakha</b> <i>Effect of hydrogen on plasticity of <math>\alpha</math>-Fe: a multi-scale assessment</i>

<b>Oral</b>	12:00-12:20 PM	<b>Chandan Kumar</b> <i>Creep and creep-fatigue interaction in Ni-based superalloy having low volume fraction of <math>\gamma'</math></i>	<b>Hiroyuki Sato</b> <i>Comparison of creep characteristics of HEA Cantor alloy and binary solid solution alloys</i>	<b>Shashank Saxena</b> <i>Simulations of creep in crystalline solids using coarse-grained atomistic</i>
<b>Oral</b>	12:20-12:40 PM	<b>Haruyuki Inui</b> <i>Can creep strength and oxidation resistance be simultaneously achieved for Co-based single crystal superalloys?</i>	<b>Abhishek Kumar</b> <i>High-temperature deformation of CoCrNi multicomponent alloy consisting of hierarchical microstructure</i>	<b>Pikee Priya</b> <i>Inverse material design using generative artificial intelligence for high mechanical strength</i>
<b>Oral</b>	12:40-1:00 PM	<b>Akshat Godha</b> <i>Understanding the role of solute elements at atomic scale during creep deformation in CMSX-4 Ni base superalloys</i>	<b>Yeshamoni Soumith Yadav</b> <i>High-temperature deformation behavior of additively manufactured Nimonic 263 lattice structures</i>	<b>Sunil Kumar</b> <i>Multi-axial cyclic deformation induced phase transitions in aluminum using large-scale molecular dynamic simulation</i>
<b>Lunch: 01:00 - 02:00 PM</b>				
<b>Plenary (Main Hall)</b>	02:00-02:45 PM	<b>Michael J. Mills</b> <i>New strengthening mechanisms in Ni-base superalloys</i> Chair: Kamanio Chattopadhyay		
	2:45-2:55 PM	<b>Sponsor Talk: Industro – Bruker</b>		
		Hall – A Chair: Subodh Kumar	Hall – B Chair: Megumi Kawasaki	Hall – C Chair: Abhik Choudhury
<b>Keynote</b>	03:00-03:35 PM	<b>Jarir Aktaa</b> <i>Creep-fatigue assessment of EUROFER taking into account the</i>	<b>S. Sankaran</b> <i>Effect of temperature and stress on the creep behavior of 718 plus alloy</i>	<b>Ramkumar Oruganti</b> <i>Some issues in creep of engineering materials and their resolution</i>

		<i>impact of cyclic softening on its creep behavior</i>	<i>having a uniform bimodal distribution of <math>\gamma'</math> precipitates</i>	
<b>Invited</b>	03:35-04:05 PM	<b>K. Bhanu Shankar Rao</b> <i>Creep-fatigue-environment interactions and other time and temperature dependent effects influencing performance of superalloy 617</i>	<b>Monalisha Mondal</b> <i>Creep and creep crack growth in unstable microstructure</i>	<b>Devinder Yadav</b> <i>Electric field assisted low temperature superplasticity in 3YSZ</i>
<b>Coffee Break: 04:05-04:25 PM</b>				
<b>Oral</b>	04:25-04:45 PM	<b>Maya K. Kini</b> <i>Deformation of CoCrFeNi alloy thin films under thermal fatigue</i>	<b>Ayan Bhowmik</b> <i>Creep deformation mechanisms in Inconel 617 explored through EBSD analysis at elevated temperatures</i>	<b>Saptarshi Dutta</b> <i>Creep life prediction of Zr-2.5Nb alloy using the modified Larson-Miller parametric technique</i>
<b>Oral</b>	04:45-05:05 PM	<b>Girija Shankar Mahobia</b> <i>Effect of ultrasonic shot peening on the fatigue behavior of 'nickel' free austenitic stainless steel</i>	<b>Abhinav K. Karnati</b> <i>Creep behavior of solid solution strengthened Co-base superalloy at intermediate temperatures (650 – 900 °C)</i>	<b>Shobhit Pratap Singh</b> <i>Creep mechanism at low stress and high temperature in single crystals</i>
<b>Oral</b>	05:05-05:25 PM	<b>Abir Bhattacharya</b> <i>Low cycle fatigue behavior of a 316LN austenitic stainless steel between 300 K-923 K</i>	<b>Benudhar Sahoo</b> <i>Investigation into degradation mechanism of turbine blades during operation of fighter aircraft engine</i>	<b>Anwasha Kanjilal</b> <i>Elevated temperature deformation of intermetallic phases in Mg-Al-Ca alloy at small length scale</i>
<b>Oral</b>	05:25-05:45 PM	<b>Deepshree Awale</b> <i>Mechanical response and fatigue life assessment of additively manufactured IN939 superalloy using miniature specimen geometry</i>	<b>Amey Parnaik</b> <i>Elucidating creep deformation mechanisms in Haynes 282 subjected to prolonged ageing treatment</i>	<b>Faizan Hijazi</b> <i>Material volume reduction for creep testing using composite cantilevers and its application for residual life assessment</i>

High Tea: 05:45 – 06:15 PM

Cultural Program: 06:15 – 07:15 (Main Hall)

30<sup>th</sup> July 2024 (Tuesday)

		Hall – A Chair: Rahul Mitra	Hall – B Chair: Amit Shyam	Hall – C Chair: Nagesha A
<b>Keynote</b>	09:30- 10:05 AM	<b>Vikram Jayaram</b> <i>Cantilever bending to study creep in inhomogeneous structures</i>	<b>Robert Brandt</b> <i>An investigation of low temperature creep controlling mechanisms in a martensitic spring steel</i>	<b>Ravi Sankar Kottada</b> <i>Investigating the role of micro-segregation on phase evolution, recrystallization and creep behavior of LPBF IN939</i>
<b>Invited</b>	10:05- 10:35 AM	<b>Srikant Gollapudi</b> <i>Creep behavior of selectively laser melted Ti-6242</i>	<b>G.V. Prasad Reddy</b> <i>Creep rupture behavior of ferritic-austenitic dissimilar joints of Grade 91 steel welded by electron beam and SMAW processes</i>	<b>Dheepa Srinivasan</b> <i>Understanding the high-temperature creep rupture notch sensitivity of additively manufactured nickel based superalloys via microstructural characterization for different heat treatments</i>
<b>Oral</b>	10:35- 10:55 PM	<b>Abhijeet Anand</b> <i>Assessment of mechanical properties of a near <math>\alpha</math> titanium alloy disc with dual microstructure</i>	<b>J Ganesh Kumar</b> <i>Creep behavior of nitrogen enhanced 316LN SS under two-step loading</i>	<b>Ranjith K Ilangoan</b> <i>Comparison of creep and stress relaxation behavior of additively manufactured AlSi10Mg</i>

Coffee Break: 10:55-11:15 AM

<b>Plenary (Main Hall)</b>	11:15- 11:55 PM	<b>Dipankar Banerjee</b> <i>Exploring low-temperature creep in titanium alloys</i> Chair: Antonin Dlouhy		
		Hall – A Chair: Boopathy Kombaiah	Hall – B Chair: Pavan H V	Hall – C Chair: Pikee Priya
<b>Oral</b>	12:00- 12:20 PM	<b>Girish Bojjawar</b> <i>Primary creep behavior of Ti-6Al and Ti-G4 at low temperatures</i>	<b>David Vijayanand V</b> <i>Creep properties of alloy D9I stainless steel subjected to prior thermal aging</i>	<b>Matheiu Lale</b> <i>Finite element modeling for better understanding martensite decomposition within an additively manufactured Ti64 during small punch creep tests</i>
<b>Oral</b>	12:20- 12:40PM	<b>Saumya Gupta</b> <i>Insights of orientation dependent spheroidization during secondary thermo-mechanically processing of Ti-6Al-4V alloys</i>	<b>T. Sakthivel</b> <i>Type IV cracking in Grade 91 steel weld joint under creep exposure</i>	<b>Luis Alexander Ávila Calderón</b> <i>Creep behavior of stainless steel 316L manufactured by laser powder bed fusion</i>
<b>Oral</b>	12:40- 01:00 PM	<b>Tejanath Reddy</b> <i>Understanding the dwell fatigue and creep properties of Imi834 insights from experiments and simulations</i>	<b>Oruganti Venkata Ramana</b> <i>Effect of re-solutionizing treatment on creep rupture behavior of nuclear grade nitrogen enhanced 316LN stainless steel</i>	<b>Md Shahwaz</b> <i>Microstructural evolution and mechanical behavior of as- built IN939 at room and elevated temperature fabricated by PBF - LB</i>
<b>Lunch: 01:00 - 02:00 PM</b>				
<b>Plenary (Main Hall)</b>	02:00- 02:45 PM	<b>Uwe Glatzel</b> <i>Creep properties of various single crystal alloys and conclusions for beyond nickel-based superalloys</i> Chair: Satyam Suwas		

		Hall – A Chair: Ayan Bhowmik	Hall – B Chair: Ajay Kumar	Hall – C Chair: Prosenjit Das
<b>Oral</b>	02:50- 03:10 PM	<b>Ashok Kumar Mondal</b> <i>Microstructure and creep behavior of SiC nanoparticles added Mg-Al-Ca-Mn alloy</i>	<b>Chanchal Sonkar</b> <i>Elevated temperature mechanical properties of cold-formed steel</i>	<b>Shavi Agarwal</b> <i>Creep behavior of Hastelloy-X processed by selective laser melting</i>
<b>Poster: 5 Minute Talk</b>	03:10- 04:00 PM	<b>Poster Group A</b>	<b>Poster Group B</b>	<b>Poster Group B</b>
04:00-05:30 PM	<b>Poster Presentation with High Tea: Foyer of J N Tata Auditorium</b>			
<b>Conference Banquet at Gokulam Grand (06:30-09:30 PM)</b>				

**31<sup>st</sup> July 2024 (Wednesday)**  
**Conference Excursion: Somanathapura and Mysore Palace**  
**Bus leaves at 6:30 AM**

**01<sup>st</sup> August 2024 (Thursday)**

		Hall - A Chair: Piyush Jagtap	Hall – B Chair: Satish Kailas	Hall – C Chair: Steffen Neumaier
<b>Invited</b>	09:30- 10:00 AM	<b>Rajeev Kapoor</b> <i>Hot deformation of Zr alloys: Microstructure and texture development</i>	<b>R. N. Singh</b> <i>An overview of thermal creep behavior of Zr-2.5Nb alloy – effect of manufacturing route, anisotropy, cold work and hydrogen</i>	<b>Kartik Prasad</b> <i>Elucidating the crack nucleation and propagation behavior of a near alpha titanium alloy under thermomechanical fatigue</i>

<b>Invited</b>	10:00-10:30 AM	<b>Ankur Chauhan</b> <i>Anisotropic creep behavior of CP-Ti plate at room temperature – insights into the deformation mechanisms</i>	<b>Apu Sarkar</b> <i>Irradiation creep in Zr-2.5%Nb alloy: a life limiting factor for pressure tube in pressurized heavy water reactor</i>	<b>Nagesha A.</b> <i>Fatigue and creep-fatigue interaction behavior of Alloy 617M under high cycle fatigue</i>
<b>Oral</b>	10:30-10:50 AM	<b>Boopathy Kombaiah</b> <i>Transitional creep mechanisms in zircalloys</i>	<b>Shobhit Pratap Singh</b> <i>Mechanical properties of grain boundaries in forsterite bicrystals</i>	<b>Shubham Sisodia</b> <i>Cyclic deformation behavior of an equiatomic CrFeNi multi-principal element alloy</i>
<b>Coffee Break: 10:50-11:05 AM</b>				
<b>Plenary (Main Hall)</b>	11:05-11:50 AM	<b>Kevin Hemker</b> <i>Experimental validation and scientific understanding of ultrahigh temperature structural materials</i> Chair: Dipankar Banerjee		
		Hall - A Chair: Pradipta Ghosh	Hall – B Chair: Abhishek K Singh	Hall – C Chair: S. Sankaran
<b>Keynote</b>	11:50-12:30 PM	<b>Antonín Dlouhý</b> <i>Grain boundaries in the equiatomic CoCrFeMnNi high-entropy alloy and their impact on creep strength</i>	<b>Enrique Galindo-Nava (Online)</b> <i>Microstructure-sensitive modelling of intermediate temperature creep in polycrystalline Ni-based superalloys</i>	<b>Martin Heilmaier</b> <i>Creep behavior and deformation mechanisms of precipitation-strengthened refractory high entropy alloys</i>
<b>Invited</b>	12:30-1:00 PM	<b>Rajesh Korla</b> <i>Role of molybdenum on high temperature deformation of Fe30Mn5Al1C(0-3) wt. % Mo light weight austenitic steels: Monotonic tensile and creep</i>	<b>Surya D Yadav</b> <i>A mean field dislocation density reliant physical model to predict the creep response and microstructure evolution of steel 304Hcu</i>	<b>Pitchuka Suresh Babu</b> <i>Creep behavior of oxide dispersion strengthened iron aluminide (Fe<sub>3</sub>Al)</i>
<b>Lunch: 01:00 - 02:00 PM</b>				

<b>Plenary (Main Hall)</b>	02:00- 02:45 PM	<b>Rolf Sandström (Online)</b> <i>Precise computation of creep properties with basic models</i> Chair: Praveen Kumar		
	02:45- 02:55 PM	<b>Sponsor Talk: BISS – ITW India</b>		
		Hall – A Chair: Kailash Jha	Hall – B Chair: Karthik Prasad	Hall – C Chair: Chandan Srivastava
<b>Invited</b>	03:00- 03:30 PM	<b>AHV Pavan</b> <i>Utilizing heat treatment as a tool for creep life improvement and rejuvenation of modified 9 Cr steel post service exposure</i>	<b>Atul Ballal</b> <i>Small punch creep testing to explore deformation in pre-fatigued and welded specimens</i>	<b>Vani Shankar</b> <i>Complexities of ferritic/martensitic (F/M) P91 steel weld joint under fatigue and creep-fatigue interaction loadings</i>
<b>Oral</b>	03:30- 03:50 PM	<b>Divya Sri Bandla</b> <i>On the influence of stacking fault energy on the creep behavior of Ni based solid-solution alloys</i>	<b>Yatindra Kumar</b> <i>Insight into the determination of threshold stress using constant-load uniaxial creep test in a Zr-2.5Nb alloy</i>	<b>Ather Syed</b> <i>Determination of high temperature creep properties of Zircaloy-4 clad tube of Indian PHWR and its application in prediction of clad burst behavior</i>
<b>Coffee Break: 03:50-04:10 AM</b>				
<b>Invited</b>	04:10- 04:40 PM	<b>Debashish Das</b> <i>Creep and stress relaxation response of collagen fibrils at the nanoscale</i>	<b>Surendra K. Makineni</b> <i>Solute defect interaction in Co-based superalloys during high temperature deformation</i>	<b>Megumi Kawasaki</b> <i>Significance of nanostructuring on mechanical properties and structural relaxation of FeCoCrNi alloys examined by in-situ heating neutron diffraction</i>



<b>Oral</b>	04:40- 5:00 PM	<b>Shibayan Roy</b> <i>High temperature deformation behavior of Al-Cu-Mn-Zr (ACMZ) alloy</i>	<b>Sabari Rajan S</b> <i>Understanding the role of micro-segregation on creep rupture behavior of LPBF processed IN718</i>	<b>Jakob Gerhard Bandorf</b> <i>In-situ characterization of the creep behavior in single-crystalline Co-base superalloys using high-energy X-ray diffraction</i>
<b>Oral</b>	5:00- 05:20 PM	<b>Kilian Sandner</b> <i>Tensile creep behavior of binary Cr-Si alloys at elevated temperatures</i>	<b>Koundinya NTBN</b> <i>Creep of carbide-strengthened superalloys</i>	<b>Nevil Martin Jose</b> <i>A multiscale material modelling methodology to consider effect of irradiation damage on mechanical properties of zirconium alloys</i>
<b>Oral</b>	05:20- 5:40 PM	<b>Mohan Raj A</b> <i>Hot deformation behavior and processing map of Al-12Ce-0.7Sc alloy</i>	<b>Divanshu Kumar</b> <i>Precipitation and segregation behavior in 602 CA nickel-based alloy during high-temperature deformation</i>	<b>Vishnuvardhan S.</b> <i>Monotonic fracture studies on dissimilar metal pipe weld joints</i>

**02<sup>nd</sup> August 2024 (Friday)**

		Hall – A Chair: Shibayan Roy	Hall – B Chair: G V Prasad Reddy	Hall – C Chair: Surendra Makineni
<b>Keynote</b>	10:00- 10:35 AM	<b>Amit Shyam</b> <i>Design of creep resistant aluminum alloys</i>	<b>Rajeev Mishra (Online)</b> <i>Creep of dispersion strengthened materials – Emergence of paradigms challenging the old theories</i>	<b>Michael Kassner (Online)</b> <i>The effect of secondary elements on creep behavior of Ni-based superalloys</i>

<b>Oral</b>	10:35-10:55 AM	<b>S. Raviprakash</b> <i>High temperature deformation studies using 3D, digital image correlation</i>	<b>Pankaj Kumar Sharma</b> <i>Investigation of high temperature creep deformation behavior of alloy 690 used in nuclear reprocessing plants</i>	<b>Syed I A Jalali (Online)</b> <i>Unveiling the impact of strain gradients and surface proximity effects on creep behavior</i>
<b>Oral</b>	10:55-11:15 AM	<b>Sanjay Kumar Pandey</b> <i>Effect of stress triaxiality on high temperature deformation behavior of SS316LN austenitic stainless steel and calibration of Johnson-Cook material damage model</i>	<b>Swati Kumari</b> <i>Effect of stacking fault energy on creep behavior of FCC medium entropy alloys</i>	<b>J.C. Stinville (Online)</b> <i>Rapid estimation of dwell fatigue life in titanium alloys by statistically analyzing the characteristics of deformation events at the nanometer scale</i>
<b>Coffee Break: 11:15-11:35 AM</b>				
		Hall – A <b>Chair: Debashish Das</b>	Hall – B <b>Chair: S. Karthikeyan</b>	Hall – C <b>Chair: Vani Shankar</b>
<b>Oral</b>	11:35-11:55 AM	<b>Nikhil Suman</b> <i>Examination of creep of dissimilar metallic joints using DIC-augmented-bending creep</i>	<b>Aritri Roy</b> <i>Temperature-driven failure in fluorapatites: An atomistic-scale study</i>	<b>J K Sahu (Online)</b> <i>From structure mechanical property correlation in nickel base superalloys to alloy development</i>
<b>Oral</b>	11:55-12:15 PM	<b>Gulnaz Parween</b> <i>Degradation of mechanical properties of nano-twinned copper at high temperature</i>	<b>C M Omprakash</b> <i>Creep damage mechanisms and prediction of creep properties of DS CM-247 Alloy</i>	<b>Ratnakar Singh</b> <i>Creep response of yttria containing hot powder forged ODS Steels</i>
<b>Oral</b>	12:15-12:35 PM	<b>Stepan Stepanov</b>	<b>Arjun Mahato</b> <i>Deformation response and microstructure and micro-texture</i>	<b>Nehe Manoj Ashok</b> <i>Significance of creep behavior in advanced-grade</i>

		<i>Additive manufacturing of orthorhombic titanium aluminide Ti<sub>2</sub>AlNb</i>	<i>evolution during hot compression of Ti-6Al-2V-1Fe-1Cr alloy</i>	<i>cladded materials for high-temperature applications: A critical review</i>
<b>Oral</b>	12:35 – 12:55 PM	<b>Abhijith Sahadevan</b> <i>Microstructural evolution and creep rupture behavior of magnetically impelled arc butt welded dissimilar joints of P91 and Super304H steel pipes</i>		

***Lunch: 12:55 - 02:00 PM***

**Valedictory and Concluding Session (02:00 – 02:45 PM)**