

Fatigue Behavior and Crack Mechanism of Metals and Alloys

Filippo Berto

Department of Chemical Engineering, Materials and Environment, Sapienza University of Rome,
00184 Rome, Italy; filippo.berto@uniroma1.it; Tel.: +39-06-4458-5908

Fatigue is one of the most critical problems in structural design, and this is true at different scale levels. The present Special Issue, Fatigue Behavior and Crack Mechanism of Metals and Alloys, aims to highlight this important topic, showing recent trends and developments. The Special Issue is dedicated to traditional and innovative materials, and the aim is to provide a full overview of the recent topics mentioned above. The SI contains 12 papers touching on different computational and experimental aspects [1–12].

The Guest Editor wants to thank all the authors and reviewers who dedicate time to this Special Issue.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Qian, D.; Ma, C.; Wang, F. The Effect of Flow Lines on the Mechanical Properties in Hot-Rolled Bearing Steel. *Metals* **2021**, *11*, 456. [\[CrossRef\]](#)
2. Tsuchiya, S.; Takahashi, K. Improving Fatigue Limit and Rendering Defects Harmless through Laser Peening in Additive-Manufactured Maraging Steel. *Metals* **2022**, *12*, 49. [\[CrossRef\]](#)
3. Ngeru, T.; Kurtulan, D.; Karkar, A.; Hanke, S. Mechanical Behaviour and Failure Mode of High Interstitially Alloyed Austenite under Combined Compression and Cyclic Torsion. *Metals* **2022**, *12*, 157. [\[CrossRef\]](#)
4. Choi, J.; Choi, J.; Lee, K.; Hur, N.; Kim, N. Fatigue Life Prediction Methodology of Hot Work Tool Steel Dies for High-Pressure Die Casting Based on Thermal Stress Analysis. *Metals* **2022**, *12*, 1744. [\[CrossRef\]](#)
5. Dharmadhikari, S.; Raut, R.; Bhattacharya, C.; Ray, A.; Basak, A. Assessment of Transfer Learning Capabilities for Fatigue Damage Classification and Detection in Aluminum Specimens with Different Notch Geometries. *Metals* **2022**, *12*, 1849. [\[CrossRef\]](#)
6. Salahshouri, F.; Saebnoori, E.; Borghei, S.; Mossahebi-Mohammadi, M.; Bakhsheshi-Rad, H.; Berto, F. Plasma Electrolytic Oxidation (PEO) Coating on γ -TiAl Alloy: Investigation of Bioactivity and Corrosion Behavior in Simulated Body Fluid. *Metals* **2022**, *12*, 1866. [\[CrossRef\]](#)
7. Ronchei, C. Fatigue Strength Estimation of Ductile Cast Irons Containing Solidification Defects. *Metals* **2023**, *13*, 83. [\[CrossRef\]](#)
8. Narkevich, N.; Vlasov, I.; Volochaev, M.; Gomorova, Y.; Mironov, Y.; Panin, S.; Berto, F.; Maksimov, P.; Deryugin, E. Low-Temperature Deformation and Fracture of Cr-Mn-N Stainless Steel: Tensile and Impact Bending Tests. *Metals* **2023**, *13*, 95. [\[CrossRef\]](#)
9. Romanova, V.; Emelianova, E.; Pisarev, M.; Zinovieva, O.; Balokhonov, R. Quantification of Mesoscale Deformation-Induced Surface Roughness in α -Titanium. *Metals* **2023**, *13*, 440. [\[CrossRef\]](#)
10. Gatina, S.; Polyakova, V.; Modina, I.; Semenova, I. Fatigue Behavior and Fracture Features of Ti-15Mo Alloy in β -, ($\alpha + \beta$)-, and Ultrafine-Grained Two-Phase States. *Metals* **2023**, *13*, 580. [\[CrossRef\]](#)
11. Scorza, D. Fatigue Life Assessment of Metals under Multiaxial Asynchronous Loading by Means of the Refined Equivalent Deformation Criterion. *Metals* **2023**, *13*, 636. [\[CrossRef\]](#)
12. Balokhonov, R.; Zemlianov, A.; Gatiyatullina, D.; Romanova, V. Computational Analysis of the Influence of Residual Stress on the Strength of Composites with Different Aluminum Matrices and Carbide Particles. *Metals* **2023**, *13*, 724. [\[CrossRef\]](#)

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.



Citation: Berto, F. Fatigue Behavior and Crack Mechanism of Metals and Alloys. *Metals* **2023**, *13*, 899. <https://doi.org/10.3390/met13050899>

Received: 19 April 2023

Accepted: 19 April 2023

Published: 6 May 2023



Copyright: © 2023 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).