

Employment

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Chair of Materials Science and Testing of Polymers (210)
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Research interests

Polymeric pipe materials
Multi-layer structures
Applied fracture mechanics
Mechanical high-speed testing
Additive Manufacturing

Journal articles

1. Wainstein, J, Wiener, J, Arbeiter, F & Frontini, PM 2023, 'Determination of creep crack growth kinetics of ABS via the C* approach at different temperatures', *Results in Engineering*, vol. 20.2023, no. December, 101481. <https://doi.org/10.1016/j.rineng.2023.101481>
2. Waly, C, Petersmann, S & Arbeiter, F 2023, 'Crack penetration versus deflection in extrusion-based additive manufacturing – Impact of nozzle temperature and morphology', *Theoretical and Applied Fracture Mechanics*, vol. 127.2023, no. October, 104032. <https://doi.org/10.1016/j.tafmec.2023.104032>
3. de Carvalho, WS, Marzemin, F, Belei, C, Petersmann, S, Arbeiter, F & de Traglia Amancio-Filho, S 2023, 'Statistical-based optimization of fused filament fabrication parameters for short-carbon-fiber-reinforced poly-ether-ether-ketone considering multiple loading conditions', *Polymer Testing*, vol. 128.2023, no. November, 108207. <https://doi.org/10.1016/j.polymertesting.2023.108207>
4. Eder, S, Kuchler, L, Katschnig, M, Brandl, B, Wolfgang, M, Koutsamanis, I, Hentschel, L, Arbeiter, F, Roblegg, E & Spoerk, M 2023, 'Personalization of Complex Vaginal Inserts of Ethylene Vinyl Acetate via 3D-Printing', *Advanced Materials Technologies*, vol. 8.2023, no. 17, 2300237. <https://doi.org/10.1002/admt.202300237>
5. Schwaiger, M, Waly, C, Huszar, M, Oreski, G, Feuchter, M, Arbeiter, F & Resch-Fauster, K 2023, 'Bioinspired fracture toughness enhancement of a fully bio-based epoxy resin', *Polymer Testing*, vol. 124.2023, no. July, 108098. <https://doi.org/10.1016/j.polymertesting.2023.108098>
6. Trávníček, L, Poduška, J, Messiha, M, Arbeiter, F, Pinter, GG, Náhlík, L & Hutař, P 2023, 'Effect of recycled material on failure by slow crack growth in multi-layer polyethylene pipes', *Engineering Fracture Mechanics*, vol. 289.2023, no. 1 September, 109423. <https://doi.org/10.1016/j.engfracmech.2023.109423>
7. Petersmann, S, Huemer, M, Hentschel, L & Arbeiter, F 2023, 'Effects of simulated body fluid on the mechanical properties of polycarbonate polyurethane produced via material jetting', *Polymer Testing*, vol. 120.2023, no. March, 107977. <https://doi.org/10.1016/j.polymertesting.2023.107977>
8. Petersmann, S, Smith, JA, Schäfer, U & Arbeiter, F 2023, 'Material extrusion-based additive manufacturing of polyetheretherketone cranial implants: Mechanical performance and print quality', *Journal of Materials Research and Technology*, vol. 22.2023, no. January-February, pp. 642-657. <https://doi.org/10.1016/j.jmrt.2022.11.143>
9. Varsavas, SD, Riemelmoser, F, Arbeiter, F & Faller, LM 2022, 'A review of parameters affecting success of lower-limb prosthetic socket and liners and implementation of 3D printing technologies', *Materials Today: Proceedings*, vol. 70.2022, pp. 425-430. <https://doi.org/10.1016/j.matpr.2022.09.280>
10. Wiener, J, Arbeiter, F, Kolednik, O & Pinter, G 2022, 'Influence of layer architecture on fracture toughness and specimen stiffness in polymer multilayer composites', *Materials and Design*, vol. 219.2022, no. July, 110828. <https://doi.org/10.1016/j.matdes.2022.110828>
11. Messiha, M, Frank, A, Arbeiter, F & Pinter, G 2022, 'On the slow crack growth process and associated structure–property relationships in polyamide 12 grades', *Journal of applied polymer science*, vol. 139.2022, no. 24, 52357. <https://doi.org/10.1002/app.52357>
12. Hentschel, L, Petersmann, S, Gonzalez-Gutierrez, J, Kynast, F, Schäfer, U, Arbeiter, F & Holzer, C 2022, 'Parameter Optimization of the ARBURG Plastic Freeforming Process by Means of a Design of Experiments Approach', *Advanced engineering materials*, vol. 24.2022, 2200279. <https://doi.org/10.1002/adem.202200279>

13. Petersmann, S, Hentschel, L, Gonzalez-Gutierrez, J, Tödtling, M, Schäfer, U, Arbeiter, F & Üçal, M 2022, 'The Effects of Washing and Formaldehyde Sterilization on the Mechanical Performance of Poly(methyl Methacrylate) (PMMA) Parts Produced by Material Extrusion-Based Additive Manufacturing or Material Jetting', *Advanced engineering materials*, vol. 24.2022, 2200225. <https://doi.org/10.1002/adem.202200225>
14. Pletz, M & Arbeiter, FJ 2022, 'Combined Crack Initiation and Crack Growth Model for Multi-Layer Polymer Materials', *Materials*, vol. 15.2022, no. 9, 3273. <https://doi.org/10.3390/ma15093273>
15. Eder, S, Wiltshcko, L, Koutsamanis, I, Afonso Urich, JA, Arbeiter, F, Roblegg, E & Spoerk, M 2022, 'Toward a new generation of vaginal pessaries via 3D-printing: Concomitant mechanical support and drug delivery', *European Journal of Pharmaceutics and Biopharmaceutics*, vol. 174.2022, no. May, pp. 77-89. <https://doi.org/10.1016/j.ejpb.2022.04.001>
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17. Waly, C, Petersmann, S & Arbeiter, F 2022, 'Multimaterial Extrusion-Based Additive Manufacturing of Compliant Crack Arrestor: Influence of Interlayer Length, Thickness, and Applied Strain Rate', *Advanced engineering materials*, vol. 2022, 2101703. <https://doi.org/10.1002/adem.202101703>
18. Messiha, M, Frank, A, Heimink, J, Arbeiter, F & Pinter, G 2022, 'Mechanisms of rapid fracture in PA12 grades', *Theoretical and Applied Fracture Mechanics*, vol. 117.2022, no. February, 103145. <https://doi.org/10.1016/j.tafmec.2021.103145>
19. Messiha, M, Frank, A, Arbeiter, F & Pinter, G 2022, 'How hydrogen bonds influence the slow crack growth resistance of polyamide 12', *Polymer*, vol. 239.2022, no. 17 January, 124437. <https://doi.org/10.1016/j.polymer.2021.124437>
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21. Spoerk, M, Arbeiter, F, Koutsamanis, I, Cajner, H, Katschnig, M & Eder, S 2021, 'Personalised urethra pessaries prepared by material extrusion-based additive manufacturing', *International Journal of Pharmaceutics*, vol. 608.2021, no. 25 October, 121112. <https://doi.org/10.1016/j.ijpharm.2021.121112>
22. Messiha, M, Frank, A, Heimink, J, Arbeiter, F & Pinter, G 2021, 'Structure-Property Relationships of Polyamide 12 Grades Exposed to Rapid Crack Extension', *Materials*, vol. 14.2021, no. 19, 5899. <https://doi.org/10.3390/ma14195899>
23. Gonzalez-Gutierrez, J, Cano Cano, S, Ecker, JV, Kitzmantel, M, Arbeiter, F, Kukla, C & Holzer, C 2021, 'Bending Properties of Lightweight Copper Specimens with Different Infill Patterns Produced by Material Extrusion Additive Manufacturing, Solvent Debinding and Sintering', *Applied Sciences : open access journal*, vol. 11, no. 16, 7262. <https://doi.org/10.3390/app11167262>
24. Rueda, F, Rull, N, Quintana, C, Torres, JP, Messiah, M, Frank, A, Arbeiter, F, Frontini, PM & Pinter, G 2021, 'Modelling Failure Of Polymers: An Optimization Strategy Based on Genetic Algorithms and Instrumented Impact Tests', *Journal of dynamic behavior of materials*. <https://doi.org/10.1007/s40870-021-00297-5>
25. Gosch, A, Arbeiter, FJ, Agnelli, S, Berer, M & Baldi, F 2021, 'Size-Induced Constraint Effects on Crack Initiation and Propagation Parameters in Ductile Polymers', *Materials*, vol. 14.2021, no. 8, 1945. <https://doi.org/10.3390/ma14081945>
26. Frank, A, Messiha, M, Koch, T, Poduška, J, Hutař, P, Arbeiter, F & Pinter, G 2021, 'Correlation of the cyclic cracked round bar test and hydrostatic pressure test for unplasticized polyvinylchloride', *Polymer Testing*, vol. 95.2021, no. March, 107125. <https://doi.org/10.1016/j.polymertesting.2021.107125>
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28. Gosch, A, Arbeiter, F, Berer, M, Vojtek, T, Hutař, P & Pinter, GG 2020, 'Fatigue characterization of polyethylene under mixed mode I/III conditions', *International Journal of Fatigue*, vol. 145.2021, no. April, 106084. <https://doi.org/10.1016/j.ijfatigue.2020.106084>
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32. Messiha, M, Frank, A, Koch, T, Arbeiter, F & Pinter, G 2020, 'Effect of polyethylene and polypropylene cross-contamination on slow crack growth resistance', *International journal of polymer analysis and characterization*, vol. 25, no. 8, pp. 649-666. <https://doi.org/10.1080/1023666X.2020.1833143>
33. Arbeiter, F, Eichinger, S, Rieß, G, Schachinger, T, Boch, R, Wenighofer, R, Galler, R, Hausberger, A, Strobl, E, Stur, M, Saliger, F, Steiner, M, Dietzel, M & Pinter, G 2020, 'Optimierte Polymer-Rohrwerkstoffe für effiziente Drainagesysteme in Tunnelbauwerken—PolyDrain Teil II', *Berg- und hüttenmännische Monatshefte : BHM*, vol. 165.2020, no. 11, pp. 623-630. <https://doi.org/10.1007/s00501-020-01045-3>
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57. Fleischmann, DD, Ayalur-Karunakaran, S, Arbeiter, F, Schaller, R, Holzner, A, Kern, W & Schlögl, S 2018, 'Influence of crosslinker and water on mechanical properties of carboxylated nitrile butadiene rubber (XNBR)', *Polymer Testing*, vol. 66.2018, no. April, pp. 24-31. <https://doi.org/10.1016/j.polymertesting.2018.01.001>
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62. Arbeiter, F, Frank, A & Pinter, GG 2016, 'Influence of molecular structure and reinforcement on fatigue behavior of tough polypropylene materials', *Journal of Applied Polymer Science*, vol. 133.2016, no. 38, 43948. <https://doi.org/10.1002/app.43948>
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69. Arbeiter, F, Pinter, G, Redhead, A & Frank, A 2012, 'Kunststofftechnik Leoben: Rohrexpertise in Spanien Präsentiert', *VLK-News*, pp. 18-18.

Activities

- Department of Materials Science and Engineering, Ghent University**
Florian Arbeiter (Visiting researcher)
15 Oct 2019 → 17 Oct 2019
- Institute of Physics of Materials of the Academy of Sciences of the Czech Republic**
Florian Arbeiter (Visiting researcher)
16 Feb 2017
- Institute of Physics of Materials of the Academy of Sciences of the Czech Republic**
Florian Arbeiter (Visiting researcher)
4 Mar 2019 → 22 Mar 2019
- Institute of Physics of Materials of the Academy of Sciences of the Czech Republic**
Florian Arbeiter (Visiting researcher)
13 Jan 2015
- Università degli Studi di Brescia**
Florian Arbeiter (Visiting researcher)
8 Mar 2018 → 9 Mar 2018
- 17-4PH Steel Parts Produced via Material Extrusion Additive Manufacturing, Debinding and Sintering**
Clemens Holzer (Speaker), Joamin Gonzales-Gutierrez (contributor), Christian Kukla (contributor), Florian Arbeiter (contributor) & Thomas Schlauf (contributor)
18 Sept 2019
- Grabungsfreie Rohrsanierungstechnologien und deren Einsetzbarkeit für Tunnel drainagen**
Michael Griebaum (contributor) & Florian Arbeiter (Speaker)
6 Jul 2022 → 8 Jul 2022
- 17th International Conference on Deformation, Yield and Fracture of Polymers**
Florian Arbeiter (Invited speaker)
27 Mar 2018
- Fracture of layered polymers**
Florian Arbeiter (Speaker)
1 Sept 2021
- Influence of crosslinker and water on mechanical properties of carboxylated nitrile butadiene rubber (XNBR)**
Doris Darya Fleischmann (Speaker), Florian Arbeiter (contributor), Wolfgang Kern (contributor) & Sandra Schlögl (contributor)
23 Apr 2018 → 25 Apr 2018
- Methodische und werkstoffliche Besonderheiten bei der Bruchsicherheitsbewertung und Lebensdauerabschätzung von Polymerwerkstoffen mittels zyklischer mechanischer Beanspruchung**
Florian Arbeiter (Invited speaker), Andreas Frank (contributor), Bernd Schrittmesser (contributor), Michael Berer (contributor), Pavel Hutař (contributor) & Gerald Gerhard Pinter (contributor)
28 Mar 2019
- 29th Colloquium on Fatigue Mechanisms**
Florian Arbeiter (Participant)
21 Mar 2019 → 22 Mar 2019
- 8. Internationale Tagung Kunststoffe im Anlagenbau**
Florian Arbeiter (Invited speaker)
10 Oct 2023 → 11 Oct 2023
- A cracking approach to inventing tough new materials: fracture stranger than friction**
Florian Arbeiter (Participant)
20 Sept 2021 → 21 Sept 2021
- PSM Vortragsveranstaltung: Lebensdauerabschätzung von Polymerwerkstoffen**
Florian Arbeiter (Invited speaker)
28 Mar 2019
- 16th International Conference on Deformation, Yield and Fracture of Polymers**
Florian Arbeiter (Speaker)
29 Mar 2015 → 2 Apr 2015
- 17th International Conference on Deformation, Yield and Fracture of Polymers**
Florian Arbeiter (Speaker)
25 Mar 2018 → 29 Mar 2018

18. **18th European Mechanics of Materials Conference**
Florian Arbeiter (Speaker) & Johannes Wiener (Speaker)
4 Apr 2022 → 6 Apr 2022
19. **18th International Conference on Deformation, Yield and Fracture of Polymers**
Florian Arbeiter (Invited speaker)
13 Apr 2022
20. **19th International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics**
Florian Arbeiter (Speaker)
15 May 2019 → 17 May 2019
21. **1st Virtual ESIS TC4 Conference on Fracture of Polymers, Composites and Adhesives**
Anja Gosch (Speaker) & Florian Arbeiter (Speaker)
28 Sept 2021 → 29 Sept 2021
22. **1st Virtual European Conference on Fracture - VECF1**
Florian Arbeiter (Speaker)
29 Jun 2020 → 1 Jul 2020
23. **22. Leobener Kunststoff-Kolloquium "Oberflächen und Grenzflächen in der Polymertechnologie"**
Florian Arbeiter (Speaker)
14 Nov 2013 → 15 Nov 2013
24. **27. Leobener Kunststoff-Kolloquium**
Florian Arbeiter (Invited speaker)
19 Apr 2018 → 20 Apr 2018
25. **28. Leobener Kunststoff-Kolloquium 2019**
Florian Arbeiter (Invited speaker)
25 Apr 2019 → 26 Apr 2019
26. **29. Leobener Kunststoff-Kolloquium**
Florian Arbeiter (Participant)
15 Sept 2021 → 16 Sept 2021
27. **4a Technology Day 2020**
Florian Arbeiter (Speaker)
3 Mar 2020 → 4 Mar 2020
28. **68. Geomechanik-Kolloquium 2019**
Tobias Schachinger (Speaker), Florian Arbeiter (Speaker), Stefanie Eichinger (Participant) & Florian Saliger (Participant)
10 Oct 2019
29. **7th International Conference on Fracture of Polymers, Composites and Adhesives**
Florian Arbeiter (Speaker)
14 Sept 2014 → 18 Sept 2014
30. **7th International Conference on Fracture of Polymers, Composites and Adhesives**
Florian Arbeiter (Speaker)
17 Sept 2014
31. **8th International Conference on Fracture of Polymers, Composites and Adhesives**
Florian Arbeiter (Participant)
10 Sept 2017 → 14 Sept 2017
32. **ASPM2013 - Austrian Slovenian Polymer Meeting**
Florian Arbeiter (Speaker)
3 Apr 2013 → 5 Apr 2013
33. **Advances in Polymer Science and Technology (APST) 3**
Florian Arbeiter (Speaker)
9 Sept 2013 → 10 Sept 2013
34. **Danube Vltava Sava Polymer Meeting - DVSPM 2017**
Florian Arbeiter (Speaker)
6 Sept 2017
35. **Danube Vltava Sava Polymer Meeting - DVSPM 2017**
Florian Arbeiter (Speaker)
6 Sept 2017
36. **ESIAM21 - Second European Conference on Structural Integrity of Additively Manufactured Materials**
Florian Arbeiter (Speaker)
8 Sept 2021 → 10 Sept 2021

37. **Eurotec 2013**
Florian Arbeiter (Speaker)
4 Jul 2013 → 5 Jul 2013
38. **Fatigue 2014**
Florian Arbeiter (Speaker)
2 Mar 2014 → 7 Mar 2014
39. **Frontiers in polymer science**
Florian Arbeiter (Participant)
20 May 2015 → 22 May 2015
40. **PPS2015 - Polymer Processing Society Conference 2015**
Florian Arbeiter (Speaker)
21 Sept 2015 → 25 Sept 2015
41. **Plastic Pipes XVI**
Florian Arbeiter (Speaker)
24 Sept 2012 → 26 Sept 2012
42. **Plastic Pipes XVII**
Florian Arbeiter (Speaker)
22 Sept 2014 → 24 Sept 2014
43. **Plastic Pipes XVIII**
Florian Arbeiter (Speaker)
14 Sept 2016
44. **Plastic Pipes in Infrastructure**
Florian Arbeiter (Speaker)
19 Apr 2016 → 21 Apr 2016
45. **Polymer Meeting 14**
Florian Arbeiter (Invited speaker)
30 Aug 2021 → 2 Sept 2021
46. **Polymertec 2014**
Florian Arbeiter (Speaker)
25 Jun 2014 → 27 Jun 2014
47. **SPE ANTEC 2017**
Florian Arbeiter (Speaker)
8 May 2017 → 10 May 2017
48. **SPE ANTEC 2017**
Florian Arbeiter (Speaker)
9 May 2017
49. **SPE ANTEC 2018**
Florian Arbeiter (Speaker)
6 May 2018 → 10 May 2018
50. **SPE ANTEC 2018**
Anja Gosch (Speaker), Florian Arbeiter (Speaker), Michael Berer (Speaker), Johannes Wiener (Speaker), Andreas Frank (Speaker) & Gerald Gerhard Pinter (Speaker)
8 May 2018