

## Academic profile - Professor Andrzej Seweryn, PhD, DSc, Eng

STUDIES	<ul style="list-style-type: none"> <li>Faculty of Power and Aeronautical Engineering, Warsaw University of Technology, field of study <i>fundamental problems of technology</i>, specialization <i>applied mechanics</i> (1981-1986).</li> </ul>
PROFESSIONAL WORK	<ul style="list-style-type: none"> <li>Toruń Ship Equipment Factory <i>Towimor</i> – designer (1986-1988);</li> <li>Bialystok University of Technology: assistant (1988-93); assistant professor (1993-1998); associate professor (1998-2006); full professor (since 2006).</li> </ul>
SCIENTIFIC DEVELOPMENT	<ul style="list-style-type: none"> <li>Doctoral degree in <i>technical sciences</i> in discipline <i>mechanics</i> given by the Scientific Board of the Institute of Fundamental Technological Research Polish Academy of Sciences in 1992;</li> <li>Postdoctoral degree in <i>technical sciences</i> in discipline <i>mechanics</i> given by the Council of the Faculty of Automotive and Construction Machinery Warsaw University of Technology in 1997;</li> <li>Title of professor in <i>technical sciences</i> given by the President of Republic of Poland in 2004.</li> </ul>
SPECIALIZATION	<ul style="list-style-type: none"> <li>field: engineering and technical sciences;</li> <li>discipline: <i>mechanical engineering</i>;</li> <li>specializations: mechanics of materials and structures, computer methods in mechanics, fatigue of materials and structures, damage and fracture mechanics, strength of structural elements, experimental methods in mechanics.</li> </ul>
IMPORTANT ACADEMIC ACHIEVEMENTS	<ul style="list-style-type: none"> <li>number of published papers – approx. 350 (including 7 monographies, 45 articles in journals indexed in JCR),</li> <li>850 citations according to the Web of Science Core Collection (no autocitations), Hirsch index – 14;</li> <li>Supervisor in 8 received doctoral degrees (dr Andrzej Łukaszewicz, dr Adam Tomczyk, dr Adam Adamowicz, dr Marek Romanowicz, dr Jarosław Szusta, dr Łukasz Derpeński, dr Anna Falkowska, dr Michał Doroszko);</li> <li>Supervisor in 3 proceedings for conferring the title of Doctor Honoris Causa at Bialystok University of Technology prof. Zenon Mróz (Institute of Fundamental Technological Research Polish Academy of Sciences) in 2012, prof. Janusz Kowal (AGH University of Science and Technology) in 2018 and prof. Jozef Zivcak (Technical University of Kosice) in 2020;</li> <li>Manager of 6 grants from the Ministry of Science and Higher Education or The National Science Centre, currently in charge of the project <i>Modelling of damage accumulation and fracture of structural materials under multiaxial fatigue loading, accounting also for creep pre-deformation and elevated temperature</i> (financed by NSC, 2019-2022);</li> <li>Reviewer in a dozen of scientific journals indexed in the JCR base, over 220 reviews of research, development, targeted and infrastructure projects, 14 coursebooks and monographies as well as in 13 doctoral degrees, 34 postdoctoral degrees and 25 proceedings for an academic title.</li> </ul>
MAIN TOPICS OF THE SCIENTIFIC RESEARCH	<ul style="list-style-type: none"> <li>modeling of damage accumulation and fracture processes in structural elements in complex state loading conditions,</li> <li>numerical modelling of deformation behaviour of porous materials using computed microtomography,</li> <li>fatigue life and strength of sintered metal alloys of varying porosity and structural materials at elevated temperature,</li> <li>experimental research and modeling of damage interaction caused by creep and fatigue,</li> <li>criteria of brittle and ductile fracture of notched elements in uni- and biaxial load conditions, also at elevated temperature,</li> <li>modeling of cracking of heterogeneous and anisotropic media on the example of wood,</li> <li>modeling of crack growth under fatigue loads,</li> <li>determination of mechanical properties of construction materials,</li> <li>finite element method in fracture mechanics applications.</li> </ul>

SELECTED MEMBERSHIP IN SCIENTIFIC ORGANIZATIONS	<ul style="list-style-type: none"> <li>• member of the Committee on Mechanics Polish Academy of Sciences (constantly since 2003);</li> <li>• member of the Committee on Metrology and Research Equipment Polish Academy of Sciences (2016-2020);</li> <li>• member of the Polish Society for Theoretical and Applied Mechanics (since 2002, in 2009-2014 president of the branch in Bialystok and National Board member, in 2017-2018 Vice-President of the National Board).</li> </ul>
IMPORTANT DIDACTICAL ACTIVITY	<ul style="list-style-type: none"> <li>• Co-organizer of the fields of study <i>biomedical engineering</i> and <i>mechatronics</i>, as well as specializations: <i>mechanics and applied computer science</i> and <i>computer aided design and manufacturing</i> in the Faculty of Mechanical Engineering Bialystok University of Technology;</li> <li>• Co-organizer of doctoral studies in disciplines: <i>mechanics</i>, <i>machine building and exploitation</i> as well as <i>biocybernetics and biomedical engineering</i>;</li> <li>• Supervisor of two scientific clubs: Theory of Constructions (1992-1995) and Computer Techniques in Design (1998-2000).</li> </ul>
FUNCTIONS PERFORMED	<ul style="list-style-type: none"> <li>• Head of the Department of Mechanics and Applied Computer Science (since 1999);</li> <li>• Dean of the Faculty of Mechanical Engineering at Bialystok University of Technology (2002-2008 and 2012-2019);</li> <li>• Vice-Rector for Science at Bialystok University of Technology (2008-2012);</li> <li>• President of the Council of Deans of Mechanical Faculties Polish Technical Universities (2012-2020).</li> </ul>
IMPORTANT ORGANIZATIONAL ACTIVITY	<ul style="list-style-type: none"> <li>• Co-creator of applications for granting the Faculty of Mechanical Engineering the right to confer academic degrees: doctoral degree in discipline <i>mechanics</i>, <i>biocybernetics and biomedical engineering</i> as well as <i>automatics and robotics</i>, and postdoctoral degree in disciplines <i>mechanics</i> as well as <i>machine building and exploitation</i>;</li> <li>• coordinator of 3 projects funded by the EU (supporting doctoral studies, scholarships for young scientists, industrial traineeships);</li> <li>• founder and editor-in-chief of the journal <i>Acta Mechanica et Automatica</i> (since 2007), indexed in Web of Science Core Collection;</li> <li>• member of the Topic Editors Board of <i>Metals</i> journal (IF=2,259, since 2020);</li> <li>• head of the Organizing Committee <i>I - X International Symposium on Mechanics of Materials and Structures</i> (recurring conference since 2001 – every 2 years);</li> <li>• member of Scientific Committees of a dozen of recurring conferences (i. e. <i>Polish Congress on Mechanics</i>, <i>Solid Mechanics Conference SolMech</i>, <i>International Conference on Mechatronics</i>, <i>International Symposium on Mechanics of Materials and Structures</i>, <i>Congress on Metrology</i>);</li> <li>• activity in ministerial teams: head of N501 section (machine building) in 2010 and member of N503 section (mechanics) in 2007 and 2010;</li> <li>• member of the Corps of Experts of The National Science Centre (since 2011);</li> <li>• member of the Advisory Team for the Polish Map of Research Infrastructure (2018-2020).</li> </ul>
THE MOST IMPORTANT PRIZES AND MENTIONS	<ul style="list-style-type: none"> <li>• Individual prize from the Minister of National Education and Sport (in 2004);</li> <li>• Second degree prize from the Committee on Mechanics Polish Academy of Sciences (in 2000);</li> <li>• Scholarship from the Foundation for Polish Science (in 1993);</li> <li>• Medal of the Commission of the National Education and Silver Cross of Merit (in 2006);</li> <li>• Medals: „60 years of Bialystok University of Technology” (in 2009), „For services to the Faculty of Mechanical Engineering at the Military University of Technology” (in 2015), „70 years of the Faculty of Mechanical Engineering at the Silesian University of Technology” (in 2015), Golden Laurel of the University of Warmia and Mazury in Olsztyn (in 2015), Platinum Medal of the Technical University of Kosice (in 2017);</li> </ul>

### More important publications:

- 1) Seweryn A. (1994), Brittle fracture criterion for structures with sharp notches, *Engineering Fracture Mechanics*, 47, 673-681 (273 citations in WoS);
- 2) Seweryn A., Mróz Z. (1995), A nonlocal stress failure condition for structural elements under multiaxial loading, *Engineering Fracture Mechanics*, 51, 955-973 (79 citations);
- 3) Seweryn A., Molski K. (1996), Elastic stress singularities and corresponding generalized stress intensity factors for angular corners under various boundary conditions, *Engineering Fracture Mechanics*, 55, 529-556 (84 citations);
- 4) Seweryn A., Poskrobko S., Mroz Z. (1997), Brittle fracture in plane elements with sharp notches under mixed-mode loading, *Journal of Engineering Mechanics-ASCE*, 123 (6), 535-543 (63 citations);
- 5) Seweryn A., Mróz Z. (1998), On the criterion of damage evolution for variable multiaxial stress state, *International Journal of Solids & Structures*, 35 (14), 1599-1616 (28 citations);
- 6) Seweryn A. (1998), A non-local stress and strain energy release rate mixed mode fracture initiation and propagation criteria, *Engineering Fracture Mechanics*, 59 (6), 737-760 (50 citations);
- 7) Seweryn A., Łukaszewicz A. (2002), Verification of brittle fracture criteria for elements with v-shaped notches, *Engineering Fracture Mechanics*, 69, 1487-1510 (120 citations);
- 8) Seweryn A. (2002), Modeling of singular stress fields using finite element method, *International Journal of Solids & Structures*, 39 (18), 4787-4804 (48 citations);
- 9) Seweryn A., Buczyński A., Szusta J. (2008), Damage accumulation model for low cycle fatigue, *International Journal of Fatigue*, 30 (4), 756-765 (22 citations);
- 10) Romanowicz M., Seweryn A. (2008), Verification of a non-local stress criterion for mixed mode fracture in wood, *Engineering Fracture Mechanics*, 75 (10), 3141-3160 (23 citations);
- 11) Szusta J., Seweryn A. (2010), Low-cycle fatigue model of damage accumulation – The strain approach, *Engineering Fracture Mechanics*, 77 (10), 1604-1616 (18 citations);
- 12) Derpenski L., Seweryn A. (2010), Experimental research into fracture of EN-AW 2024 and EW-AW 2007 aluminum alloy specimens with notches subjected to tension, *Experimental Mechanics*, 51 (7), 1075-1094 (18 citations);
- 13) Seweryn A., Szusta J. (2011), Fatigue damage accumulation modelling in the range of complex low-cycle loadings – The strain approach and its experimental verification on the basis of EN AW-2007 aluminum alloy, *International Journal of Fatigue*, 33 (2), 255-264 (13 citations);
- 14) Doroszko M., Seweryn A. (2015), Numerical modeling of the tensile deformation process of sintered 316L based on microtomography of porous mesostructures, *Materials & Design*, 88, 493-504 (8 citations);
- 15) Derpenski L., Seweryn A., (2016), Ductile fracture of EN-AW 2024 aluminum alloy specimens with notches under biaxial loading. Part 1 - Experimental research, *Theoretical and Applied Fracture Mechanics*, 84, 203–214 (9 citations);
- 16) Derpenski L., Seweryn A., (2016), Ductile fracture of EN-AW 2024 aluminum alloy specimens with notches under biaxial loading. Part 2 - Numerical research and ductile fracture criterion, *Theoretical and Applied Fracture Mechanics*, 84, 203-214 (12 citations);
- 17) Doroszko M., Seweryn A., (2017), A new numerical modelling method for deformation behavior of metallic porous materials using X-ray computed microtomography, *Materials Science & Engineering A*, 689, 142-156 (10 citations);
- 18) Szusta J., Seweryn A., (2017), Experimental study of the low-cycle fatigue life under multiaxial loading of aluminium alloy EN AW-2024-T3 at elevated temperatures, *International Journal of Fatigue*, 96, 28-42 (16 citations);
- 19) Tomczyk A., Seweryn A. (2017), Fatigue life of EN AW-2024 alloy accounting for creep pre-deformation at elevated temperature, *International Journal of Fatigue*, 103, 488-507 (6 citations);
- 20) Falkowska A., Seweryn A., Tomczyk A. (2018), Fatigue life and strength of 316L sintered steel of varying porosity, *International Journal of Fatigue*, 111, 161-176 (6 citations);
- 21) Doroszko M., Seweryn A. (2020), Pore-scale numerical modelling of large deformation behaviour of sintered porous metals under compression using computed microtomography, *Mechanics of Materials*, 141, 103259.