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**ANKIETA OCENY OSIĄGNIĘĆ NAUKOWYCH KANDYDATA DO TYTUŁU PROFESORA**

**1. Informacja o osiągnięciach i dorobku**

**1) Publikacje w czasopismach krajowych i międzynarodowych:**

A. Prace wykonane po uzyskaniu stopnia docenta Uppsala University (1994)

*1) Wykaz prac autorskich*

- P1. T. Stepinski, "NDT research and development in Sweden", Insight, Euro Issue, vol. 39, no 3, 1997, pp. 161-163
- P2. T. Stepinski, "An Implementation of Synthetic Aperture Technique in Frequency Domain", IEEE Trans. UFFC, 2007, Vol. 54, no 7, July 2007, 1399-1408.

*2) Wykaz prac współautorskich*

- P3. M.G. Gustafsson and T. Stepinski, "Split Spectrum Algorithms Rely on Instantaneous Phase Information", IEEE Trans. on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 40, Nov. 1993, pp. 659-665.
- P4. M. Gramz and T. Stepinski, "Eddy Current Imaging, Array Sensors and Flaw Reconstruction", Research in Nondestructive Evaluation, vol. 5, no. 3, 1994, pp. 157-174
- P5. P.Wu, R. Kazys and T. Stepinski, "Analysis of the Numerically Implemented Angular Spectrum Approach Based on the Evaluation of Two-Dimensional Acoustic Fields--Part I: Errors due to the Discrete Fourier Transform and Discretization", J. Acoust. Soc. Am. 99 (3), March 1996, pp. 1339-1348.
- P6. P.Wu, R. Kazys and T. Stepinski, "Analysis of the Numerically implemented Angular Spectrum Approach Based on the Evaluation of Two-Dimensional Acoustic Fields--Part II: Characteristics as a Function of Angular Range", J. Acoust. Soc. Am. 99 (3), March 1996, pp. 1349-1359.
- P7. P.Wu, R. Kazys and T. Stepinski, "Optimal Selection of Parameters for the Angular Spectrum Approach to Numerically Evaluate Acoustic Fields", J. Acoust. Soc. Am., vol. 101, no. 1(1997), pp. 125-134.
- P8. M. Gustafsson, and T. Stepinski, "Studies of split spectrum processing, optimal detection and maximum likelihood amplitude estimation using a simple clutter model", Ultrasonics, vol. 35, January 1997, pp. 31-52.
- P9. P. Wu, R. Kazys and T. Stepinski, "Response to Comments on 'Analysis of the Numerically implemented Angular Spectrum Approach Based on the Evaluation of Two-Dimensional Acoustic Fields--Part I and Part II'", J. Acoust. Soc. Am. 101 (6), June 1997, pp. 3804-3805.
- P10. P. Wu and T. Stepinski, "Elastic fields in immersed isotropic solids from phased arrays: Time harmonic case", Research in Nondestructive Evaluation, vol 10, pp. 185-204, 1998
- P11. T. Olofsson and T. Stepinski, "A linear time-invariant approach for ultrasonic transducer normalization", Research in Nondestructive Evaluation, vol. 11, No 2, 1999, pp. 59-80
- P12. P. Wu and T. Stepinski "Spatial Impulse Response Method for Predicting Pulse-Echo Fields from a Linear Array with Cylindrically Concave Surface", IEEE Trans. on Ultrasonics, Ferroelectrics and Frequency Control, vol. 46, no. 5, 1999, pp. 1283-1297.
- P13. P. Wu and T. Stepinski, "Extension of the Angular Spectrum Approach to Curved Radiators", J. Acoust. Soc. Am., vol. 105, no. 5, 1999, pp. 2618-2627.
- P14. T. Olofsson and T. Stepinski, "Maximum a posteriori deconvolution of sparse ultrasonic signals using genetic optimization", Ultrasonics, vol.37, no 6, 1999, pp. 423-432
- P15. F. Lingvall, T. Stepinski, " Automatic Detecting and Classifying Defects During Eddy Current Inspection of Riveted Lap-Joints", NDT&E International, vol. 33, no 1, 2000, pp. 47-55.
- P16. T. Stepinski, L. Ericsson, B. Vagnhammar and M. Gustafsson, "Classifying Ultrasonic Resonance Spectra Using Neural Network", Materials Evaluation, vol 58, no 1, 2000, pp.74 -79.

- P17. Ping Wu and Tadeusz Stepinski, "Quantitative estimation of ultrasonic attenuation in a solid in the immersion case with correction of diffraction effects", *Ultrasonics*, vol. 38, issues 1-8, 2000, pp. 481-485.
- P18. T. Olofsson and T. Stepinski, "Maximum a posteriori deconvolution of ultrasonic signals using multiple transducers", *J. Acoust. Soc. Am.* 107 (6), June 2000, pp. 3276-3288
- P19. T. Olofsson and T. Stepinski, "Minimum entropy deconvolution of attenuated pulse-echo signals", *J. Acoust. Soc. Am.* 109 (6), June 2001, pp 2831-2839.

#### B. Prace wykonane po uzyskaniu stopnia profesora Uppsala University

- P20. L. Ericsson and T. Stepinski, "Algorithms for Suppressing Ultrasonic Backscattering from Material Structure", *Ultrasonics*, vol. 40, nos 1-8, May 2002, pp. 733-34.
- P21. P. Wu and T. Stepinski, "A spatial-impulse-response-based method for determining effective geometrical parameters for spherically focused transducers", *Ultrasonics*, vol. 40, nos 1-8, May 2002, pp. 307-12.
- P22. F. Lingvall, T. Olofsson and T. Stepinski, "Synthetic aperture imaging using sources with finite aperture-deconvolution of the spatial impulse response", *J. Acoust. Soc. Am.*, vol. 114, (1), July 2003, pp. 225-234
- P23. Guang-Ming Zhang, T. Olofsson, T. Stepinski, "Ultrasonic NDE Image Compression by Transform and Subband Coding", *NDT&E International*, vol.37, pp 325-333, 2004.
- P24. T. Lilliehorn, U. Simu, M. Nilsson, M. Almqvist, T. Stepinski, T. Laurell, J. Nilsson, S. Johansson, "Trapping of microparticles in the near field of an ultrasonic transducer", *Ultrasonics*, vol. 43, pp. 293-303, 2005.
- P25. T. Stepinski and M. Jonsson, "Narrowband Ultrasonic Spectroscopy for NDE of Layered Structures", *INSIGHT*, the Journal of The British Institute of Non-Destructive Testing, vol. 47, April, pp. 220 - 224, 2005.
- P26. E. Wennerstöm, T. Stepinski and T. Olofsson, "An Iterative Synthetic Aperture Imaging Algorithm with Correction of Diffraction Effects", *IEEE Trans. UFFC*, vol. 53, no. 5, May 2006.
- P27. M. Engholm and T. Stepinski, "Designing and evaluating transducers for narrowband ultrasonic spectroscopy", *NDT & E International*, Volume 40, Issue 1, January 2007, Pages 49-56.
- P28. E. Wennerstöm and T. Stepinski, "Model-Based Correction of Diffraction Effects of the Virtual Source Element", *IEEE Trans. UFFC*, vol. 54, no. 8, August 2007.
- P29. L. Hasse, M. Kiwilszo, J. Smulko, T. Stepinski, "Quality Assessment of Varistor ZnO Structures by Resonant Ultrasound Spectroscopy", *INSIGHT*, Journal of The British Institute of NDT, vol. 51, May 2009, 262-65.
- P30. M. Engholm and T. Stepinski, "Direction of arrival estimation of Lamb waves using circular arrays", *Structural Health Monitoring*, vol. 10, no 5, 2011, pp. 467-80.
- P31. M. Engholm and T. Stepinski, "Adaptive beamforming for array imaging of plate structures using Lamb wave", *IEEE Trans. on Ultrasonics, Ferroelectrics and Frequency Control*, vol. 57, no 12, Dec. 2010, pp. 2712-24
- P32. T. Lukomski and T. Stepinski, "Steel hardness evaluation based on ultrasound velocity measurements" *INSIGHT*, The Journal of The British Inst. of Non-Destructive Testing, Nov. 2010, pp. 592-96.
- P33. T. Lukomski and T. Stepinski, "Application of resonant ultrasound spectroscopy in diagnostics of rings", *INSIGHT*, The Journal of The British Inst. of Non-Destructive Testing, vol. 53, April 2011, pp. 192-95.
- P34. M. Engholm and T. Stepinski and T. Olofsson, "Imaging and suppression of Lamb modes using adaptive beamforming", *Smart Materials and Structures*, vol. 20. no 8, 2011.

#### 3) Monografia:

- M1. T. Stepinski (author & editor), *Inspection of copper canisters for spent nuclear fuel by means of ultrasound*, ISSN 1404-0344, Swedish Nuclear Fuel and Waste Management Co, Stockholm.
- Part1. T. Stepinski, F. Lingvall and E. Wennerström, "NDE of friction stir welds, nonlinear acoustics, ultrasonic imaging", January 2004, 94 pp.
- Part2. T. Stepinski, P. Wu and E. Wennerström, "Phased arrays, ultrasonic imaging and nonlinear acoustics", September 2004, 94 pp.
- Part3. T. Stepinski, T. Olofsson and E. Wennerström, "Ultrasonic imaging, FSW monitoring with acoustic emission", December 2006, 80 pp.
- Part4. T. Stepinski, M. Engholm, T. Olofsson, "FSW monitoring with emission, copper characterization and ultrasonic imaging", September 2008, 54 pp.
- Part5. T. Stepinski, M. Engholm, T. Olofsson, "Copper characterization, FSW monitoring with acoustic emission and ultrasonic imaging", August 2009, 53pp .
- Part6. T. Stepinski, M. Engholm, T. Olofsson, "Algorithms for ultrasonic imaging", July 2011, 93 pp.

Punktacja za okres po uzyskaniu profesury Uppsala University			Rok	Ilość punktów MNiSW
P	27	Ultrasonics	2002	35
P	28	Ultrasonics	2002	35
P	29	J. Acoust. Soc. Am.	2003	35
P	30	NDT&E International	2004	40
P	31	Ultrasonics	2005	35
P	32	INSIGHT	2005	20
P	33	IEEE Trans. UFFC	2006	35
P	34	NDT&E International	2007	40
P	35	IEEE Trans. UFFC	2007	35
P	36	IEEE Trans. UFFC	2007	35
P	37	INSIGHT	2009	20
P	38	Structural Health Monitoring	2011	40
P	39	IEEE Trans. UFFC	2010	35
P	40	INSIGHT	2010	20
P	41	Smart Materials and Structures	2011	40
<b>SUMA punktów</b>				<b>500</b>

### C. Prace wykonane po uzyskaniu stopnia doktora habilitowanego w AGH w 2011r

#### 2) Wykaz prac współautorskich

- PA1. L. Ambrozinski, T. Stepinski, P. Packo and T. Uhl, "Self-focusing Lamb waves based on the decomposition of the time-reversal operator using time–frequency representation", *Mechanical Systems and Signal Processing* Vol. 27, Feb. 2012, pp. 337-349
- PA2. L. Ambrozinski, T. Stepinski, T. Uhl, J. Ochonski, A. Klepka, "Development of Lamb waves-based SHM systems", *Key Engineering Materials*, vol. 518 (2012) pp 87-94
- PA3. M. Manka, M. Rosiek, A. Martowicz, T. Stepinski and T. Uhl, "Lamb wave transducers made of piezoelectric macro-fiber composite", *Structural Control & Health Monitoring* (2013) 20:1138–1158. DOI: 10.1002/stc.1523
- PA4. Z. Dworakowski, L. Ambrozinski, P. Packo, K. Dragan, T. Stepinski, T. Uhl, Application of Artificial Neural Networks for Damage Indices Classification with the Use of Lamb Waves for the Aerospace Structures *Key Engineering Materials Vol. 588 (2014) pp 12-21 Online available since 2013/Oct/11*
- PA5. K. Dragan, M. Dziendzikowski, T. Uhl, T. Stepinski, "Remote Monitoring of Fatigue Cracks Growth in the Aircraft Structure Based on Active Piezosensor Network During the Full Scale Fatigue Test", *Key Engineering Materials Vol. 588 (2014) pp 249-256, Online available since 2013/Oct/11*
- PA6. L. Ambrozinski, T. Stepinski, T. Uhl, Efficient Tool for Designing 2D Phased Arrays in Lamb Waves Imaging Applications, *Journal of Intelligent Material Systems and Structures (Sage)*, *Online available since August 12, 2014*, doi: 10.1177/1045389X14545389
- PA7. L. Ambrozinski, B. Piwakowski, T. Stepinski, T. Uhl, Evaluation of Dispersion Characteristics of Multimodal Guided Waves Using Slant Stack Transform, *NDT&E International (Elsevier)*, *Online available since 27 Aug. 2014*, doi: 10.1016/j.ndteint.2014.08.006

- PA8. Z. Dworakowski, L. Ambrozinski, P. Packo, K. Dragan, T. Stepinski, "Application of artificial neural networks for compounding multiple damage indices in Lamb-wave-based damage detection", *Structural Control Health Monitoring*, Volume 22, Issue 1, January 2015.
- PA9. L. Ambrozinski, P. Packo, L. Pieczonka, T. Stepinski, T. Uhl and W. J. Staszewski, "Identification of material properties – efficient modelling approach based on guided wave propagation and spatial multiple signal classification", *Structural Control Health Monitoring*, 7 JAN 2015, DOI: 10.1002/stc.1728

### 3) Monografia

M2. *Advanced Structural Damage Detection: From Theory to Engineering Applications*, T. Stepinski, T. Uhl and W. Staszewski, editors, John Wiley & Sons, Ltd, June, 2013, 328 pp

Rozdział w książce, K. Filipek, M. Manka, P. Paćko, T. Uhl, and T. Stepinski, "Simulations of ultrasonic guided waves with use of combined Finite Element and Finite Difference Methods", *Recent Advances in Computational Mechanics*, T. Łodygowski, J. Rakowski & P. Litewka, edytorzy, CRC Press, London, 2014.

Punktacja za okres po habilitacji AGH			Ilość punktów	
PA	1	Mechanical Systems and Signal Processing	2012	45
PA	2	Key Engineering Materials	2012	8
PA	3	Structural Control & Health Monitoring	2013	30
PA	4	Key Engineering Materials	2013	8
PA	5	Key Engineering Materials	2013	8
PA	6	J. of Intelligent Material Syst. and Structures	2014	30
PA	7	NDT&E International	2014	40
PA	8	Structural Control Health Monitoring	2015	30
PA	9	Structural Control Health Monitoring	2015	30
<b>SUMA punktów</b>				<b>229</b>

Cytowania:

*Scopus - Documents (88), h-index 14, Citations 547*

*Web of Science - Documents (90), h-index-13, citations 487*

*Google Scholar - h-index 16, citations 1129*

## 2. Informacja o aktywności naukowej

### a) Udział w krajowych i międzynarodowych konferencjach naukowych

#### A. Prace wykonane po uzyskaniu stopnia docenta Uppsala University (1994)

- C1. T. Stepinski, L. Ericsson, B. Eriksson and M. Gustafsson, "Quasi Frequency Diversity Processing of Ultrasonic Signals - A Review", in *Advances in Signal Processing for Non-Destructive Evaluation of Materials*, X.P.V. Maldague, ed., Kluwer Academic Publ., 1994, pp. 49-58.
- C2. L. Ericsson, T. Stepinski, "An Implementation of Signal Processing Algorithms for Ultrasonic NDE", *Proc. of the 12th Int. Conf. on NDE in the Nuclear and Pressure Vessel Industries*, Oct. 1993, Philadelphia, USA
- C3. T. Stepinski, "Digital Processing of Eddy Current Signals and Images", *Proc of the 6th European Conf. on NDT*, Nice, October 1994, pp. 51-55
- C4. L.Ericsson, T. Stepinski, "Ultrasonic Pulse Detection with Split Spectrum Processing and Consecutive Polarity Coincidence", *Proc. of the 13th Int. Conf. on NDE in the Nuclear and Pressure Vessel Industries*, May 1995, pp. 201-208
- C5. D. Andrews, J. Blanchard, T. Stepinski, L. Ericsson, "Ultrasonic spectroscopy for NDT", Presented at *Int. Symp. Non-Destructive Testing in Civil Engineering (NDT-CE)*, Berlin, 1995
- C6. P.Wu, R. Kazys, T. Stepinski, "Calculation of Transient Fields in Immersed Solids Radiated by Linear Focusing Arrays", *Proceedings of the 1995 IEEE Ultrasonic Symposium*, Seattle, USA, Nov. 1995, pp. 993-997.
- C7. B.Eriksson and T. Stepinski, "Characterization of Ultrasonic Signals Using Synthetic Data and Neural Networks", *Acoustical Imaging*, vol 22, pp 765-770, 1996
- C8. T.Olofsson, T.Stepinski, "Blind deconvolution through parametric identification using second and fourth order cumulants", *Proc of the 1996 IEEE Ultrasonics Symposium*, pp. 717-721
- C9. T. Stepinski, P. Wu, "Inspection of Copper Lined Canisters for Nuclear Waste Fuel Using Ultrasonic Arrays", *Proc. of the 14th International Conference on NDE in the Nuclear and Pressure Vessel Industries*, 24-26 September 1996, pp. 519-524
- C10. B. Eriksson, T. Stepinski, B.E. Vagnhammar, "A Tool for Ultrasonic Defect Characterization Using Neural Networks", *Proc of the 14th International Conference on NDE in the Nuclear and Pressure Vessel Industries*, 24-26 September 1996, pp. 437-443
- C11. T. Stepinski, B. Vagnhammar, "Automatic detecting disbounds in layered structures using ultrasonic pulse-echo inspection", *Proc of the 7th ECNDT*, Copenhagen, May 1998, pp.349-355.
- C12. T. Stepinski, L. Ericsson, M.G. Gustafsson, B. Vagnhammar, "Neural network based classifier for ultrasonic resonance spectra", *Proc of the 7th ECNDT*, Copenhagen, May 1998, pp.2363-2370.
- C13. T. Stepinski, P. Wu, M.G. Gustafsson and L. Ericsson, "Ultrasonic array technique for the inspection of copper lined canisters for nuclear waste fuel", *Proc of the 7th ECNDT*, Copenhagen, May 1998, pp. 1377-1383.
- C14. F. Lingvall and T. Stepinski, "Automatic detection of defects in riveted lapjoints using eddy current", *Proc of the 7th ECNDT*, Copenhagen, May 1998, pp.60-67.
- C15. L. Ericsson, T. Stepinski and M. Gustafsson, "Speckle Suppression in ultrasonic imaging", *Proc. Of the Fifth International Symposium on Methods and Models in Automation and Robotics*, Miedzyzdroje, Poland, pp. 859-864.
- C16. L. Ericsson, T. Stepinski and M. Gustafsson, "Suppressing Ultrasonic Grain Noise Using Non-linear Filtering Techniques", Presented at the *First International Conference on NDE in Relation to Structural Integrity for Nuclear and Pressurized Components*, Amsterdam, October 20-22, 1998.
- C17. P.Wu and T. Stepinski, "Detection of Defects in Materials Characterized by large Grain Backscattering Using K-distribution" Presented at the *First International Conference on NDE in Relation to Structural Integrity for Nuclear and Pressurized Components*, Amsterdam, October 20-22, 1998
- C18. T. Stepinski and P. Wu, "Ultrasonic Technique for Imaging Welds in Copper", *IMTC/99, 16th IEEE Instrumentation and Measurement Technology Conference*, Venice, May 24-26, 1999, pp. 856-859.
- C19. P. Wu and T. Stepinski, "Investigation of Effective Geometrical Parameters for a Pulse-Echo Linear Array with Cylindrical Curved Focusing Surface" *Joint EAA/Acoustical Society of America Meeting*, Berlin, Germany, March 14-19, 1999.
- C20. P. Wu and T. Stepinski, "An Approach to Calculating Spatial Impulse Response of Curved Transducers: Linear Arrays with Cylindrically Curved Surfaces", *Joint EAA/Acoustical Society of America Meeting*, Berlin, Germany, March 14 -19, 1999.

- C21. Ping Wu and Tadeusz Stepinski, "Quantitative estimation of ultrasonic attenuation in a solid in the immersion case with correction of diffraction effects", UI'99, Ultrasonic International, Copenhagen, July, 1999.
- C22. T. Stepinski and P. Wu, "Evaluation of Ultrasonic Attenuation and Estimation of Ultrasonic Grain Noise in Copper", Int. Symposium on Material Characterization, Sydney, July, 1999
- C23. T. Stepinski, "NDE of Copper Canisters for Long Term Storage of Spent Nuclear Fuel from the Swedish Nuclear Power Plants", Proc. of the 28<sup>th</sup> Polish Conference on NDT, Zakopane, October 1999, pp. 223 - 230 (in Polish)
- C24. T. Stepinski, P. Wu and L. Ericsson, "Ultrasonic Imaging of Copper Material Using Harmonic Components", *The 2nd International Conference on NDE in Relation to Structural Integrity for Nuclear and Pressurized Components*, New Orleans, USA, May 24-26, 2000, pp. C-301-313
- C25. T. Stepinski, "Essential Variables in ET", *15th World Conference on NDT Rome*, October 15-21, 2000.
- C26. T. Stepinski and F. Lingvall, "Automatic Defect Characterization in Ultrasonic NDT", *15th World Conference on NDT Rome*, October 15-21, 2000.
- C27. T. Stepinski and L. Ericsson, "Signal Processing for Ultrasonic Testing Materials with Coarse Structure", *15th World Conference on NDT Rome*, October 15-21, 2000.
- C28. T. Stepinski and P. Wu, "Ultrasonic Harmonic Imaging in Nondestructive Evaluation: Preliminary Experimental Study", *IEEE Ultrasonic Symposium*, Puerto Rico, October 22-26, 2000.
- C29. T. Stepinski and P. Wu, "Ultrasonic Imaging and Evaluation of Electron Beam Welds in Copper Canisters", *2001 MRS Spring Meeting*, April 16-20, 2001, San Francisco, USA (published at SKB Technical Report TR-01-25, August 2001, pp. 53-58).
- C30. T. Stepinski, "Enhancing Resolution in Ultrasonic Imaging using Transducer Harmonic Components", invited paper at the *International Conference on Theoretical and Computational Acoustics*, Beijing, 21-25 May, 2001.
- C31. P. Wu and T. Stepinski, "Angular space algorithm - a novel algorithm for the angular spectrum approach for axisymmetric transducers", *International Conference on Theoretical and Computational Acoustics*, Beijing, 21-25 May, 2001.
- C32. L. Ericsson and T. Stepinski, "Algorithms for Suppressing Ultrasonic Backscattering from Material Structure - A Review", *UI'01 Ultrasonics International*, Delft, Holland, July 2-5, 2001.
- C33. P. Wu and T. Stepinski, "A spatial-impulse-response-based method for determining effective geometrical parameters for spherically focused transducers", *UI'01 Ultrasonics International*, Delft, Holland, July 2-5, 2001.
- C34. T. Olofsson and T. Stepinski, "Deconvolution of NDE Signals", invited paper at *IVth International Workshop Advances in Signal Processing for Non Destructive Evaluation of Materials*, Quebec, Canada, August 7-10, 2001

*B. Prace wykonane po uzyskaniu stopnia profesora Uppsala University*

- C35. T. Stepinski, "Advanced Nondestructive Methods for Inspection of Canisters for Spent Nuclear Fuel", invited paper presented at *Workshop on Nondestructive Testing of Materials and Structures, NMT' 02*, May 20-22, 2002, Warsaw, Poland
- C36. T. Stepinski, "Resonance Ultrasound Spectroscopy - A Tool for Quality Control of Steel Products", presented at *Stal 2002*, Stockholm, May 15-16, 2002
- C37. T. Stepinski, "Deep Penetrating Eddy Current for Detecting Voids in Copper", Proc of the *8<sup>th</sup> European Conference on NDT*, Barcelona, Spain, June 17-21, 2002
- C38. V. Uchanin, G. Mook and T. Stepinski, "Investigation of Deep Penetrating High Resolution EC Probes for Subsurface Flaw Detection and Sizing", Proc of the *8<sup>th</sup> European Conference on NDT*, Barcelona, Spain, June 17-21, 2002
- C39. F. Lingvall and T. Stepinski, "Compensating Transducer Diffraction Effects in Synthetic Aperture Imaging for Immersed Solids", Proc of the *2002 IEEE International Ultrasonic Symposium*, October 8-11, Munich, Germany
- C40. T. Stepinski, "NDE of Copper Canisters for Long Term Storage of Spent Nuclear Fuel from the Swedish Nuclear Power Plants", Proc of the *SPIE's 8<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 2-6 March, 2003, pp. 25-33.
- C41. T. Stepinski, "Ultrasonic spectroscopy of adhesively bonded multi-layered structures", presented at *3<sup>rd</sup> International Conf. Emerging Technologies in Non-Destructive Testing*, 26-28 March, 2003, Thessaloniki, Greece

- C42. T. Stepinski, "Ultrasonic phased arrays", invited paper presented at *Workshop on Nondestructive Testing of Materials and Structures, NMT' 03*, May 21-23, 2003, Warsaw, Poland
- C43. T. Stepinski, "Processing Eddy Current Signals for the Detection of Deep Voids in Copper", presented at *Review of Progress in Quantitative NDE*, July 27 – August 1, 2003, Green Bay, Wisconsin, USA.
- C44. T. Stepinski, "Ultrasonic spectroscopy for the inspection of aerospace structures", presented at *SPIE's 9th Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 2-6 March, 2004.
- C45. T. Stepinski and F. Lingvall, "Optimized algorithm for synthetic aperture imaging", presented at the *2004 IEEE UFFC 50th Anniversary Conference*, 24-27 August, 2004, Montréal, Canada.
- C46. T. Stepinski, "Narrowband Ultrasonic Spectroscopy for NDE of Layered Structures", presented at the *16th World Congress of NDT*, 30<sup>th</sup> August – 3<sup>rd</sup> September, 2004, Montréal, Canada.
- C47. F. Lingvall, T. Olofsson, E. Wennerström and T. Stepinski, "Optimal Linear Receive Beamformer for Ultrasonic Imaging in NDT", presented at the *16th World Congress of NDT*, 30<sup>th</sup> August – 3<sup>rd</sup> September, 2004, Montréal, Canada.
- C48. W. D. Feist, G. Mook, S. Taylor, H. Söderberg, A. Mikic and T. Stepinski, "Non-destructive Evaluation of Manufacturing Anomalies in Aero-Engine Rotor Discs", presented at the *16th World Congress of NDT*, 30<sup>th</sup> August – 3<sup>rd</sup> September, 2004, Montréal, Canada.
- C49. T. Stepinski and M. Jonsson "Inspecting multilayered aerospace structures using ultrasonic narrowband spectroscopy", presented at *SPIE's 10th Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 6 – 10 March, 2005.
- C50. T. Stepinski and M. Jonsson, Narrow band ultrasonic spectroscopy - a new method for the inspection of carbon fiber reinforced composites, accepted for the 12<sup>th</sup> Int. Annual Conference on Composites/Nano-engineering, ICCE-12, 1-6 August, 2005, Tenerife, Spain.
- C51. M. Engholm and T. Stepinski, "Designing and Evaluating Transducers for Narrowband Ultrasonic Spectroscopy", *Proc. of the IEEE Ultrasonic Symposium, Rotterdam*, Sept. 2005.
- C52. T. Stepinski, Ultrasonic inspection of aerospace composite structures using narrowband ultrasonic spectroscopy, presented at *Aerospace Testing Expo 2006 Europe*, April 4-6 2006.
- C53. T. Stepinski, "Assessing Quality of Self-piercing Rivets Using Ultrasound", *Proc. of the 9th European Conference on NDT*, Berlin, 25-29, Sept. 2006.
- C54. T. Stepinski and M. Engholm, "Narrowband Ultrasonic Spectroscopy for Inspecting Multilayered Aerospace Structures", *Proc. of the 9th European Conference on NDT*, Berlin, 25-29, Sept. 2006.
- C55. T. Stepinski and M. Engholm, "Design of piezoelectric transducers for health monitoring of composite aircraft structures", *Proc of the SPIE's Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 18-22 March, 2007, San Diego.
- C56. T. Stepinski and M. Engholm, "Structural health monitoring of composite structures for temperature varying applications", *6th International Workshop on Structural Health Monitoring – 2007*, Stanford University, Stanford, CA USA, Sept. 11-13, 2007.
- C57. T. Stepinski, "SAFT Performance in ultrasonic inspection of coarse grained metals," *Proc. Of the 6<sup>th</sup> Int. Conf. on NDE in Relation to Structural Integrity for Nuclear Pressurised Components*, Budapest, 8-10 October, 2007.
- C58. T. Stepinski and M. Engholm, "Uniform circular array for structural health monitoring of composite structures", *Proc of the SPIE's Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 9-13 March, 2008, San Diego.
- C59. T. Stepinski and M. Engholm, "On the Development and Testing of a Uniform Circular Array for Structural Health Monitoring of Planar Structures", *Proc. of the Fourth European Workshop on Structural Health Monitoring*, July 2008, Krakow, Poland.
- C60. T. Stepinski and M. Engholm, "Piezoelectric Circular Array for Structural Health Monitoring Using Plate Waves", *7th International Workshop on Structural Health Monitoring – 2009*, Stanford University, Stanford, CA USA, 2009.
- C61. T. Olofsson and T. Stepinski, "Frequency-domain SAFT for the Ultrasonic Inspection of Coarse Grained Metals", *7th International Conference on NDE in Relation to Structural Integrity for Nuclear and Pressurized Components*, Yokohama, May 12-14, 2009.
- C62. T. Stepinski and M. Engholm, "Direction of Arrival Estimation of Multimodal Lamb Waves Using 2-D Arrays", presented at *2009 IEEE Int. Ultrasonics Symposium*, Rome, Sept. 2009.
- C63. T. Olofsson and T. Stepinski, "Phase shift migration for imaging layered materials and objects immersed in water", *2009 IEEE Int. Ultrasonics Symposium*, Rome, Sept. 2009.

- C64. T. Stepinski and M. Engholm, "Using 2-D Arrays for Sensing Multimodal Lamb Waves", *Proc of the SPIE's Annual International Symposium on NDE for Health Monitoring and Diagnostics*, San Diego, 7 – 11 March, 2010, Proc. SPIE **7649**, 764913 (2010).
- C65. T. Stepinski and F. Lingvall, "Synthetic aperture focusing techniques for ultrasonic imaging of solid objects", *EUSAR 2010, 8<sup>th</sup> European Conference on Synthetic Aperture Radar*, Aachen, Germany, June 7 – 10, 2010, pp.438-41.
- C66. T. Stepinski and M. Engholm, "Advanced Beamforming of 2D Arrays for Structural Health Monitoring Using Lamb Waves", *5<sup>th</sup> European Workshop on Structural Health Monitoring*, 2010, Sorrento, Italy, June 28 -July 2.
- C67. A. Klepka, T. Uhl, T. Stepinski, Ł. Ambroziński and J. Ochoński, "Comparison of Two Baseline-free Damage Detection Techniques Based on Lamb Waves Propagation Phenomena", *5<sup>th</sup> European Workshop on Structural Health Monitoring*, 2010, Sorrento, Italy, June 28 – July 2.
- C68. T. Stepinski and M. Engholm, "Advanced beamforming of 2D arrays for structural health monitoring using Lamb waves", *5<sup>th</sup> European Workshop on SHM*, 29 June – 02 July, Sorrento, Italy
- C69. L. Ambrozinski, P. Packo, T. Stepinski, T. Uhl, "Ultrasonic guided waves based method for SHM – simulations and an experimental test", *5th World Conference on Structural Control and Monitoring*, 12-14 July, 2010, Tokyo, Japan
- C70. M. Mańka, M. Rosiek, A. Martowicz, T. Uhl, T. Stepinski, "Design and simulations of Interdigital Transducers for Lamb-wave based SHM systems", *11th IMEKO TC 10 Workshop on Smart Diagnostics of Structures*, October 18-20, 2010 Krakow, Poland
- C71. T. Łukomski, T. Stepinski, "Application of resonant ultrasound spectroscopy in diagnostics of rings", *11th IMEKO TC 10 Workshop on Smart Diagnostics of Structures*, October 18-20, 2010 Krakow, Poland
- C72. J. Ochoński, Ł. Ambroziński, A. Klepka, T. Uhl, T. Stepinski, "Choosing an appropriate sensor for the designed SHM system based on lamb waves propagation", *11th IMEKO TC 10 Workshop on Smart Diagnostics of Structures*, October 18-20, 2010 Krakow, Poland
- C73. M. Rosiek, A. Martowicz, T. Uhl, T. Stepinski, T. Łukomski, "Electromechanical impedance method for damage detection in mechanical structures", *11th IMEKO TC 10 Workshop on Smart Diagnostics of Structures*, October 18-20, 2010 Krakow, Poland.
- C74. L. Ambrozinski, P. Packo, T. Stepinski and T. Uhl, "Ultrasonic Guided Wave Method for SHM – Simulations and Experimental Test", *5<sup>th</sup> World Conf. on Structural Control and Monitoring*, 12-14 July 2011, Tokyo, Japan
- C75. T. Stepinski, "Ultrasonic nondestructive inspection of solid objects", invited paper at Int. Congress of Ultrasonics, Gansk, 5-8 Sept, 2011, published in AIP Conf. Proc. 1433, pp. 11-20; doi:<http://dx.doi.org/10.1063/1.3703130>
- C76. L. Ambrozinski, T. Stepinski and T. Uhl, "Self Focusing of 2D Arrays for SHM of Plate-Like Structures Using Time Reversal Operator", *Proc. 8<sup>th</sup> Workshop on SHM*, Sept. 13-15, 2011, Stanford, CA, USA, pp. 1119-27
- C77. M. Manka, M. Rosiek, A. Martowicz, T. Uhl and T. Stepinski, "Properties of Interdigital Transducers for Lamb-Wave Based SHM Systems", *Proc. 8<sup>th</sup> Workshop on SHM*, Sept. 13-15, 2011, Stanford, CA, USA, pp. 1488-96.

*C. Prace wykonane po uzyskaniu stopnia doktora habilitowanego w AGH w 2011r:*

- CA1. L. Ambrozinski, P. Packo, T. Stepinski and T. Uhl, "Experimental comparison of 2D arrays topologies for SHM of planar structures", *SPIE Conf. Smart Structures and Materials & NDE and Health Monitoring 2012*, San Diego, USA, Proc. SPIE 8347, pp. 8347171-7.
- CA2. L. Ambrozinski, T. Stepinski and T. Uhl, "Design of 2D phased array for monitoring isotropic plate-like structures using Lamb waves", *6th European Workshop on Structural Health Monitoring*, Dresden, July 3-6, 2012, pp. 1-8.
- CA3. L. Ambrozinski, B. Piwakowski, T. Stepinski and T. Uhl, "Application of air-coupled ultrasonic transducers for damage assessment of composite panels", *6th European Workshop on Structural Health Monitoring*, Dresden, July 3-6, 2012, pp.1-8.
- CA4. A. Klepka, T. Stepinski, W.J. Staszewski and F. Aymerich, " Digital Filters for Extracting Nonlinear Modulation of Elastic Waves Caused by Damage", *ICAST2012: 23rd International Conference on Adaptive Structures and Technologies*, October 11-13, 2012, Nanjing, China, pp.1-10.
- CA5. T. Stepinski, L. Ambrozinski, and T. Uhl, "Designing 2D arrays for SHM of planar structures: A review", *Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure*,



- and Homeland Security 2013; San Diego, CA; United States; March 2013, Proc. of SPIE. Vol. 8694, 2013, pp. 86941R1-12.
- CA6. L. Ambrozinski, P. Magda, T. Stepinski and T. Uhl, A method for compensation of the temperature effect disturbing Lamb wave propagation, QNDE 2013, July, 2013, Baltimore, USA, pp. 1-8.
- CA7. L. Ambrozinski, P. Magda, K. Dragan, T. Stepinski, and T. Uhl, "Temperature Compensation Based on Hilbert Transform and Instantaneous Phase for Lamb Waves-Based SHM Systems of Aircraft Systems", Structural Health Monitoring 2013, ed. Fu-Kuo Chang, Proc. of the 9th International Workshop on SHM, Stanford Univ., Stanford, CA, USA, Sept. 2013, pp.1259-66
- CA8. T. Stepinski, L. Ambrozinski, and T. Uhl, "Beamforming of Lamb Waves using 2D Arrays: A Comparative Study", Structural Health Monitoring 2013, ed. Fu-Kuo Chang, Proc. of the 9th International Workshop on SHM, Stanford Univ., Stanford, CA, USA, Sept. 2013, pp. 2210-17
- CA9. M. Manka, M. Rosiek, A. Martowicz, L. Ambrozinski, T. Uhl, and T. Stepinski, "Novel Method for Simulation of Lamb Wave Propagation Generated by an Interdigital Transducer", Structural Health Monitoring 2013, ed. Fu-Kuo Chang, Proc. of the 9th International Workshop on SHM, Stanford Univ., Stanford, CA, USA, Sept. 2013, pp. 2488-95
- CA10. T. Stepinski, L. Ambrozinski and T. Uhl, "2D aperture synthesis for Lamb wave imaging using co-arrays", Health Monitoring of Structural and Biological Systems 2014; San Diego, CA; United States; March 2014, Proc. of SPIE Vol. 9064 pp. 90642A-1-14.
- CA11. M. Manka, M. Rosiek, A. Martowicz, T. Stepinski, T. Uhl, "Tunable Interdigital Transducer for Lamb Waves", 7th European Workshop on Structural Health Monitoring, July 8-11, 2014. La Cité, Nantes, France
- CA12. L. Ambrozinski, B. Piwakowski, T. Stepinski, T. Uhl, "Pitch-Catch Air-Coupled Ultrasonic Technique for Detection of Barely Visible Impact Damages in Composite Laminates", 7th European Workshop on Structural Health Monitoring, July 8-11, 2014. La Cité, Nantes, France, pp. 1902-909.
- CA13. Z. Dworakowski, L. ambrozinski, K. Dragan, T. Stepinski, T. Uhl, "Voting Neural Network Classifier for Detection of Fatigue Damage in Aircrafts", 7th European Workshop on Structural Health Monitoring, July 8-11, 2014. La Cité, Nantes, France, p. 1894-18201.
- CA14. L. Ambrozinski, T. Stepinski and T. Uhl, "Designing of Sparse 2D Arrays for Lamb Wave Imaging Using Co-Array Concept", QNDE (Review of Progress in Quantitative Nondestructive Evaluation), Boise USA, July 20-25, 2014, AIP Conference Proceedings 1650, 192 (2015); doi: 10.1063/1.4914610, pp. 192-201.
- CA15. T. Stepinski, L. Ambrozinski and T. Uhl, "Damage Imaging Using Lamb Waves for SHM Applications", QNDE (Review of Progress in Quantitative Nondestructive Evaluation), Boise USA, July 20-25, 2014, AIP Conference Proceedings 1650, (2015); doi: 10.1063/1.4914595 p. 63-74.
- CA16. Ł. Ambroziński, T. Stepinski, and T. Uhl, "Separation of Lamb waves modes using polarization filter of 3D laser measured signals", Health Monitoring of Structural and Biological Systems 2015; San Diego, CA; United States; March 2015, Proc. of SPIE Vol. 9437, pp. E1-8
- CA17. Z. Dworakowski, L. ambrozinski, K. Dragan, T. Stepinski, T. Uhl, "Data fusion for compensation of temperature variations in Lamb-wave based SHM systems", Health Monitoring of Structural and Biological Systems 2015; San Diego, CA; United States; March 2015, Proc. of SPIE Vol. 9438, pp. S1-8.

#### **b) Członkostwo w komitetach naukowych i radach naukowych czasopism**

European Workshop on Structural Health Monitoring (EWSHM) Steering Committee  
 Acta Mechanica et Automatica Bialystok University of Technology Faculty of Mechanical Engineering  
 Diagnostyka, czasopismo naukowe Polskiego Towarzystwa Diagnostyki Technicznej

#### **c) Wykaz zrealizowanych projektów naukowo-badawczych krajowych, europejskich i innych międzynarodowych**

Udział w projektach europejskich:

Tytuł projektu	Okres	Funding
Ultrasonic resonance spectroscopy quality assurance (task leader)	1993-96	BriteEuram
Cost reduction by advanced non-destructive inspection of aeronautical structures (CANDIA) (task leader)	1996-99	BriteEuram

Signal processing and improved qualification for NDT of ageing reactors (SPIQNAR) (task leader)	2000-03	5 <sup>th</sup> Framework
Integrating process controls with manufacturing to produce high integrity rotating parts for modern gas turbines (MANHIRP) (task leader)	2001-04	5 <sup>th</sup> Framework
Improved NDE concepts for innovative aircraft structures and efficient operation maintenance (INCA) (task leader)	2001-04	5 <sup>th</sup> Framework

*Kierownictwo projektów krajowych szwedzkich:*

<i>Tytuł projektu</i>	<i>Funding</i>	<i>Okres</i>
Digital signal processing in nondestructive testing (kierownik)	STU-NUTEK	1989-94
Information processing in nondestructive testing using neural networks (kierownik)	NUTEK	1991-95
Signal processing technique for ultrasonic inspection of anisotropic materials (kierownik zadania)	SKI	1991-96
Ultrasonic defect characterization (kierownik)	SKI	1993-99
Adaptive ultrasonic arrays (kierownik)	NUTEK	1995-97
Processing of ultrasonic signals (kierownik)	NUTEK	1991-99
Artificial intelligence in NDT (kierownik)	TFR (industrial)	1994-99
Transient analysis using neural networks (kierownik)	NUTEK	1995-97
Improved defect detection in ultrasonic inspection of aerospace sandwich structures (kierownik zadania)	NFFP	1995-97
Inspection of copper canisters for spent nuclear fuel by means of ultrasonic array system (kierownik zadania)	SKB	1994-2011
Nondestructive characterization of steel alloys (kierownik zadania)	JERNKONTORET	2008-2011
Structural Health Monitoring of Piping in Nuclear Power Plants (kierownik)	SSM (Swedish Radiation Safety)	2009- 2011

*Wykaz projektów krajowych (polskich):*

<i>Tytuł projektu</i>	<i>Funding</i>	<i>Okres</i>
Monitorowanie Stanu Technicznego Konstrukcji i Ocena jej Żywotności MONIT (członek zespołu badawczego)	Innowacyjna Gospodarka	1999 - 2013
Opracowanie systemu monitorowania stanu technicznego samolotu PZL - ORLIK TC II w oparciu o wieloprzetwornikową sieć czujników PZT (członek zespołu badawczego)	NCBiR (Lider)	2009 - 2013
System wykrywania przecieków w sieciach wodociągowych za pomocą analizy echa (członek zespołu badawczego)	NCBiR (PBS)	2013 - 2015
Analiza własności materiałów piezoelektrycznych pod kątem selektywnego generowania fal (kierownik)	NCN (Opus 6)	2014 - 2016

**d) informacje o kierowaniu zespołami badawczymi realizującymi projekty finansowane w drodze konkursów krajowych i zagranicznych**

Kierownik zespołu badawczego w Uppsala University, Department of Technical Sciences, Signals and Systems w latach 1990 do 2011r. Zespół ten zrealizował wszystkie projekty europejskie i szwedzkie wymienione w punkcie c) powyżej. W tym czasie zostało wypromowanych 5-ciu doktorów i 6-ciu licencjantów nauk technicznych.

### 3. Informacja o współpracy z otoczeniem społecznym i gospodarczym

#### a) & c) dorobek technologiczny

Wdrożenie techniki zautomatyzowanych ultradźwiękowych do badania produktów przemysłu stalowniczego wykonane przez własną firmę TSONIC AB w Uppsali:

- *SSAB Öxelösund, Szwecja* – 3 systemy do automatycznego badania jakości blach stalowych walcowanych na gorąco (we współpracy z francuską firmą Socomate International).
- *Ovako Hofors* – 1 system do automatycznej kontroli wymiarów rur stalowych bez szwu (we współpracy z francuską firmą Socomate International).
- *Geosigma/Geoequipment AB* – opracowanie instrumentu Rock Bolt Tester do kontroli jakości kotw stalowych przy pomocy ultradźwiękowych fal prowadzonych.

#### b) patenty (wnioski)

- PP1. Assessing the quality of rivets by evaluating the complex valued electrical impedance of a piezoelectric ultrasonic transducer, United Kingdom Patent Application, October 2006 STEPINSKI, Tadeusz (WARWICKSHIRE MFG GROUP; TSONIC; UNIV WARWICK); UK Patent application GB 2425179-A  
<http://www.directorypatent.com/GB/2425179-a.html>
- PP2. Method and apparatus for assessing quality of rivets using ultrasound, October 2006, STEPINSKI, Tadeusz (UNIVERSITY OF WARWICK) WO/2006/110089 (A1)  
<https://patentscope.wipo.int/search/en/detail.jsf?noMenu=false&docId=WO2006110089&recNum=2&maxRec=&office=&prevFilter=&sortOption=&navig=existing&queryString=>
- PP3. Ultrasonic piezoelectric transducer design and control methods] / Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie ; wynalazca: MAŃKA Michał, MARTOWICZ Adam, ROSIEK Mateusz, STEPINSKI Tadeusz, UHL Tadeusz. — Int.Cl.: B06B 1/06<sup>{(2006.01)}</sup>. — Polska. — Opis zgłoszeniowy wynalazku ; PL 399163 A1 ; Opubl. 2013-11-25. — Zgłosz. nr P.399163 z dn. 2012-05-14 // Biuletyn Urzędu Patentowego ; ISSN 0137-8015 ; 2013 nr 24, s. 5-6.  
<http://patenty.bg.agh.edu.pl/pelneteksty/PL399163A1.pdf>
- PP4. Ultradźwiękowy przetwornik piezoelektryczny i sposób jego sterowania — [Design and control methods of the piezoelectric ultrasonic transducer] / Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie ; wynalazca: MAŃKA Michał, MARTOWICZ Adam, ROSIEK Mateusz, STEPINSKI Tadeusz, UHL Tadeusz. — Int.Cl.: B06B 1/06<sup>{(2006.01)}</sup>. — Polska. — Opis zgłoszeniowy wynalazku ; PL 399164 A1 ; Opubl. 2013-11-25. — Zgłosz. nr P.399164 z dn. 2012-05-14 // Biuletyn Urzędu Patentowego ; ISSN 0137-8015 ; 2013 nr 24, s. 6.  
<http://patenty.bg.agh.edu.pl/pelneteksty/PL399164A1.pdf>

#### d) ekspertyzy i inne opracowania wykonane na zamówienie instytucji publicznych lub przedsiębiorstw.

Raporty wykonane dla Swedish Nuclear Fuel and Waste Management Co. (SKB), *większość jest dostępna na stronie internetowej SKB: [http://www.skb.se/Templates/Standard\\_17139.aspx](http://www.skb.se/Templates/Standard_17139.aspx)*

- R1. T. Stepinski, P. Wu, "Inspection of Copper Canisters for spent nuclear fuel by means of ultrasonic array system", SKB Projektrapport 97-06, August 1997
- R2. B. Vagnhammar, L. Ericsson, T. Stepinski and B. Grelsson, "Improved defect detection in ultrasonic inspection of bounded structures", Report UPTec 97 105R, Inst. for Material Science, Uppsala University, September 1997
- R3. T. Stepinski and E. Martinez, "Detection of surface and subsurface defects in copper canisters using eddy current", SKB Inkapsling, Projektrapport 98-02, April 1998.
- R4. P. Wu and T. Stepinski, "Inspection of copper canisters for spent nuclear fuel by means of ultrasonic array system, Modeling, defect detection and grain noise estimation", Technical Report TR-99-12, Swedish Nuclear Fuel and Waste Management Co, Stockholm, July 1998.

- R5. P. Wu and T. Stepinski, "Inspection of copper canisters for spent nuclear fuel by means of ultrasonic array system, Evaluation of electron beam welds, modeling and material characterization", Technical Report TR-99-43, Swedish Nuclear Fuel and Waste Management Co, Stockholm, December 1999.
- R6. P. Wu, F. Lingvall and T. Stepinski, "Inspection of copper canisters for spent nuclear fuel by means of ultrasound, Electron beam weld evaluation, harmonic imaging, materials characterization and ultrasonic modeling", Technical Report TR-00-23, Swedish Nuclear Fuel and Waste Management Co, Stockholm, December 2000.
- R7. F. Lingvall, P. Wu and T. Stepinski "Inspection of copper canisters for spent nuclear fuel by means of ultrasound, Nonlinear acoustics, synthetic aperture imaging", Technical Report, TR-03-05, Swedish Nuclear Fuel and Waste Management Co, Stockholm, March 2003.

Raporty wykonane dla Swedish Radiation Safety Authority

- R1. T. Stepinski, "Essential variables in Eddy Current Inspection", SKI Report 00:30, May 2000.
- R2. T. Stepinski, "Structural health monitoring of piping in nuclear power plants – A review of efficiency of existing methods", Swedish Radiation Safety Authority, Report number: 2011:17, ISSN:2000-0456, May 2011.

Raporty wykonane dla The Swedish Steel Producers Association (JERNKONTORET) w j. szwedzkim:

- R1. B. Sjögren, M. Engman, M. Falkenström and T. Stepinski, "Oförstörande bestämning av mikrostruktur, härdjup och inre spänningar", D 841, 2012-01-30.
- R2. T. Stepinski, T. Łukomski and M. Szvedo, "Oförstörande undersökning av mikrostruktur med hjälp av resonant ultraljudspektroskopi", TO 44-34, 2012-03-21
- R3. T. Stepinski, T. Łukomski, "Oförstörande undersökning av mikrostruktur med hjälp av EMAT prob", TO 44-35, 2012-04-11.
- R4. T. Łukomski and T. Stepinski, "Evaluation of synthetic aperture focusing technique (SAFT) for immersion inspection of steel samples, TO 44-38, 2012-10-31.
- R5. R. Risberg, P-O. Persson and T. Stepinski, "Phased array teknik för ökad inspektionshastighet", TO44-39, 2012-10-31.

**e) prowadzenie lub współuczestnictwo w spółce technologicznej lub spółce celowej**

1. Spółka akcyjna *TSONIC AB*, Uppsala, Szwecja – dyrektor i udziałowiec
2. Spółka akcyjna *Geoequipment AB*, Sztokholm, Szwecja – dyrektor techniczny i udziałowiec
3. Spółka akcyjna *MONIT SHM Sp. z o. o.*, Kraków, Polska – udziałowiec, konsultant

#### **4. Informacja o współpracy międzynarodowej**

##### **a) & g) staże zagraniczne i udział w międzynarodowych zespołach badawczych**

1. Zatrudnienie w firmie Sandvik Bergstrand AB w Szwecji w latach 1984 – 88 (R&D responsible).
2. Zatrudnienie w na Wydz. Technologii, Uppsala University
  - stały etat wykładowcy (lecturer) w 1992 roku.
  - stopień naukowy docenta (szwedzki odpowiednik polskiego stopnia doktora habilitowanego) w Uppsala University w 1994 roku.
  - stopień naukowy profesora Uppsala University w dziedzinie metrologii elektrycznej (electrical measuring engineering) w roku 2002.
  - Kierownik zespołu badawczego Badań nieniszczących w Zakładzie Signals and Systems w latach 1990 do 2011.
3. Visiting Professor (Full Professor of first class) w Ecole Centrale de Lille, Laboratory of Vibration Physics and Acoustics, Lille, Francja; kwiecień – maj 2001 i 2002.

##### **b) Udział w ocenie projektów międzynarodowych**

EU Cordis expert, FP7, 2012r.

##### **c) Recenzowanie prac publikowanych w czasopismach międzynarodowych**

Ultrasonics; J. JASA (J. Acoust. Soc. Am.); NDT&E International; IEEE Trans. UFFC, J. Structural Health Monitoring; Smart Materials and Structures.

##### **d) Członkostwo w międzynarodowych organizacjach i towarzystwach naukowych**

- IEEE Inst. of Electrical and Electronic Engineers) – senior member
- Acoustical Society of America – member
- ASNT (American Society for NDT) – member
- British Institute of Non-Destructive Testing – member
- Swedish Society for NDT (FOP) – member.

##### **f) Uczestnictwo w programach europejskich (szczegóły w p 3c)**

BRITE Euram, 5<sup>th</sup> EU Framework

## 5. Informacja o osiągnięciach i dorobku dydaktycznym i popularyzatorskim

### 1) Wykaz prowadzonych zajęć dydaktycznych

*Politechnika Szczecińska, Wydz. elektryczny*

<i>Przedmiot</i>	<i>Odpowiedzialność</i>	<i>Okres</i>
Podstawy elektroniki	ćwiczenia i laboratoria	1976 to 1984
Automatyka	ćwiczenia i laboratoria	1974 to 1984
Automatyka procesów przemysłowych	wykłady i ćwiczenia	1974 to 1984
Identyfikacja obiektów	ćwiczenia i laboratoria	1980 to 1984

*Uppsala University, Signals and systems (w jęz. szwedzkim i angielskim)*

<i>Przedmiot</i>	<i>Odpowiedzialność</i>	<i>Okres</i>
Signal processing	ćwiczenia	1988 - 1994
Nondestructive evaluation of materials	wykłady, ćwiczenia i lab.	1994 - 2005
Sensors and transducers	wykłady, ćwiczenia i lab.	1998 - 2004
Virtual measurement instruments	wykłady, ćwiczenia i projekty	1998 - 2010
Signals and systems	wykłady	od 2006
Signals and embedded systems	wykłady	od 2012

*AGH, Kat. Robotyki i Mechatroniki (w jęz. polskim i angielskim)*

<i>Przedmiot</i>	<i>Odpowiedzialność</i>	<i>Okres</i>
Signals and systems (j. ang)	wykłady	od 2011
Mechatronic system identification	wykłady	od 2012
Identification and signal analysis	wykłady	od 2012

### 2) Wypromowani doktorzy nauk technicznych (promotor)

*Uppsala University*

*(rozprawy dostępne w bibliotece Uppsala University: <http://disaweb.uu.se/cgi-bin/chameleon?host=localhost+8045+DEFAULT&lng=en&skin=default>)*

1	Mats Gustafsson	Statistical Aspects of the Split Spectrum Technique, Uppsala University, 1995, ISBN 91-554-3490-8	maj, 1995
2	Tomas Olofsson	Maximum a posteriori Deconvolution of Ultrasonic data with Applications in Nondestructive testing, Uppsala University, 2000, ISBN	grudzień, 2000
3	Fredrik Lingvall	Time-domain Reconstruction Methods for Ultrasonic Array Imaging. A Statistical Approach, Uppsala University, 2004, ISBN 91-506-1772-9	październik, 2004
4	Marcus Engholm	Ultrasonic Arrays for Sensing and Beamforming of Lamb Waves, Uppsala University, 2010, ISBN 978-91-554-7785-1	maj, 2010

*Promotorstwo doktoratów w AGH*

	Tomasz Łukomski (współpromotor)	Ultrasonic nondestructive methods in inspection of steel.	czerwiec 2011
6	Łukasz Ambroziński (współpromotor)	Damage detection in plate-like metallic and composite structures using multiple piezo-electric transducers	listopad 2014
7	Ziemowit Dworakowski (promotor)	Application of Artificial Intelligence in automatic condition monitoring of plate-like structures	Obrona planowana jesienią 2015 r.

*Wypromowani licencjanci nauk technicznych<sup>1</sup> (promotor):*

- |                     |                   |
|---------------------|-------------------|
| 1. Mats Gustafsson  | wrzesień, 1992    |
| 2. Lars Ericsson    | październik, 1994 |
| 3. Bo Eriksson      | wrzesień, 1995    |
| 4. Fredrik Lingvall | luty, 2000        |
| 5. Marcus Engholm   | sierpień, 2006    |
| 6. Erik Wennerström | czerwiec, 2007    |

**6. Informacja o otrzymanych nagrodach i wyróżnieniach**

Nagroda Ministra MSWIT zespołowa stopnia drugiego, październik, 1976r

Nagroda Ministra MSWIT zespołowa stopnia drugiego, październik, 1981r

Nagrody Rektora Politechniki Szczecińskiej

Nagroda Rektora AGH – 2012r

Złoty medal Króla Szwecji Karola Gustava XVI – 2014r



Kraków , lipiec 2015r

Tadeusz Stepinski

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<sup>1</sup> Licencjat nauk technicznych uzyskuje się w Szwecji po 2 - 3 latach studiów doktoranckich. Po uzyskaniu tego stopnia można przerwać studia doktoranckie.