

**PhD Eng. Krzysztof Buksa, associate professor**



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**Faculty of Food Technology**

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**Consultation hours: Tuesday 10:00 – 12:00**

**Research interest:**

- HPLC, HPSEC, TLC chromatography
- isolation of bioactive compounds from plant material method development
- the structure and properties of polysaccharides especially arabinoxylans and starch
- the structure and properties of non starch polysaccharides (inulin, FOS, xylan, arabinogalactan, beta-glucan, galactomannan)
- cereals
- properties of flours made especially from: rye, wheat, oat
- sourdough, rye, wheat bread baking
- fermentation processes
- roasting process and chemical composition of various kinds of coffee
- role and occurrence of ferulic acid
- viscosity and rheology
- new analytical method development

**PI in current projects:**

1. Principal Investigator in Luventus Plus IP2011 005571. Title: The influence of polysaccharide - protein interactions on rye bread properties.
2. Principal Investigator in N N312 440837. Title: The influence of the content and properties of pentosans on the quality of bread baked from rye flours varying in ash content.
3. Principal investigator in DS-3709/1/KTW/2018. Title: Examination of properties and possibilities of application of cereal-based in food technology.

**Research experience:****Visiting Scholar**

1. 01-10-2007 - 30-11-2007 (2 months); Austria, Universitat fur Bodenkultur Wien, realisation of project entitled: Molecular characteristics of starch and pentosans using HPSEC and GCMS.
2. 25-02-2008 - 01-03-2008 (1 week); Austria, Universitat fur Bodenkultur Wien,
3. 22-06-2009 - 28-06-2009 (1 week); Austria, Universitat fur Bodenkultur Wien,

Content of the teaching programme:

- Isolation and characterization of pentosans from cereals particular wheat and rye.
  - Application of byproducts from flour mills in food and non food products.
  - Practical course
4. 29-06-2009 to 11-07-2009 (2 weeks); Austria, Karl-Franzens Universität (KFUG) Graz, co-organisation of the course (Intensive Programme) concerning renewable resources (as Managing Assistant) – The 7 ECTS acknowledged Intensive Programme (IP) 'Sustainable Utilization of Renewable Resources' at Karl-Franzens Universität (KFUG) Graz / Austria.
  5. 23-27.11.2009; Radzików, Poland. HEALTHGRAIN Workshop and Analytical Training Course – organized by International Association for Cereal Science and Technology.
  7. 25-27.08.2010; Austria, Universität fur Bodenkultur Wien
  8. 17 – 19.10.2011; Warsaw. Poland. "HPLC Master Class": "Advanced Method Development" and "HPLC Troubleshooting".
  9. 11-13.01.2012; Austria, University of Vienna, Institute of Pharmaceutical Technology and Biopharmacy.
  11. 04.08.2014 - 03.10.2014 (2 months); Austria, University of Vienna, Institute of Pharmaceutical Technology and Biopharmacy.
  12. 01.08.2016 - 30.09.2016 (2 months); Austria, University of Vienna, Institute of Pharmaceutical Technology and Biopharmacy.

**DSc, (Habilitation): Habilitation - awarded scientific achievement.** Food Science and Technology. Series of 6 single-issue articles under one title: „The role of rye water extractable arabinoxylan, of various molar mass, native and modified, in creation of rye bread quality”.

**PhD:** Dissertation titled: „The influence of starch and pentosans properties on baking quality of wholemeal obtained from polish rye varieties”, 2008. Supervisor: prof. dr hab. Anna Nowotna.

**Professional profiles:**

ORCID: <http://orcid.org/0000-0002-2509-5881>

Research Gate: [https://www.researchgate.net/profile/Krzysztof\\_Buksa/info?ev=prf\\_info](https://www.researchgate.net/profile/Krzysztof_Buksa/info?ev=prf_info)

LinkedIn: <https://www.linkedin.com/in/krzysztof-buksa-87682490/>

List of publications:

**Examples of papers indexed in Journal Citation Reports (JCR):**

1. **Buksa K.,** Nowotna A., Praznik W., Gambuś H., Ziobro R., Krawontka J. **2010.** The role of pentosans and starch in baking of wholemeal rye bread. Food Research International. 43. 2045–2051. IF = 2.416, 32 pkt MNiSW,
2. **Buksa K.,** Ziobro R., Nowotna A., Praznik W., Gambuś H. **2012.** Isolation, modification and characterization of soluble arabinoxylan fractions from rye grain. European Food Research and Technology. 235 (3), 385-395. IF = 1.436, 30 pkt MNiSW,
3. **Buksa K.,** Nowotna A., Ziobro R., Gambuś H., Kowalski S. **2012.** The influence of oxidizing agents on water extracts of rye flour. Food Hydrocolloids. 27. 72-79. IF = 3.494, 40 pkt MNiSW,
4. Praznik W., **Buksa K.,** Ziobro R., Gambuś H., Nowotna A. **2012.** The effect of long-term alkali treatment on the molecular characteristics of native and extruded starches at 35oC. Starch/Staerke. 64, 890-897. IF = 1.220, 30 pkt MNiSW,
5. **Buksa K.,** Ziobro R., Nowotna A., Gambuś H. **2013.** The influence of native and modified arabinoxylan preparations on baking properties of rye flour. Journal of Cereal Science. 58, 23-30. IF = 1.943, 35 pkt MNiSW,
6. Gumul D., Krystyjan M., **Buksa K.,** Ziobro R., Zięba T. **2013.** The influence of oxidation, extrusion and oxidation/extrusion on physico-chemical properties of potato starch. Starch/Staerke. 6, 1-9. IF = 1.401, 25 pkt MNiSW,

7. **Buksa K.,** Nowotna A., Ziobro R., Gambuś H. **2014.** Rye flour enriched with arabinoxylans in rye bread making. *Food Science and Technology International*. 21 (1), 45-54. IF = 0.981, 25 pkt MNiSW,
8. **Buksa K. 2014.** Komponowanie składu mąki żytniej służącej do wypieku modelowych chlebów żytnich metodą bezpośrednią. *Żywność Nauka. Technologia. Jakość*. 2 (93), 175 – 189. IF = 0.311, 15 pkt MNiSW,
9. **Buksa K.,** Nowotna A, Ziobro R., Praznik W. **2014.** Molecular properties of arabinoxylan fractions isolated from rye grain of different quality. *Journal of Cereal Science*. 60 (2), 368-373. IF = 1.943, 35 pkt MNiSW,
10. Berski W., Krystyjan M., **Buksa K.,** Zięć G., Gambuś H. **2014.** Chemical, physical and rheological properties of oat flour affected by the isolation of beta-glucan preparation. *Journal of Cereal Science* 60 (3), 533–539. IF = 1.943, 35 pkt MNiSW,
11. **Buksa K.,** Ziobro R., Nowotna A., Adamczyk G., Sikora M., Żylewski M. **2015.** Water binding capacity of rye flours with the addition of native and modified arabinoxylan preparations. *Journal of Agricultural Science and Technology*. 16 (5), 1083-1095. IF = 0.679, 25 pkt MNiSW,
12. Socha R., Fortuna T., Gałkowska D., Robak J., **Buksa K. 2015.** Characterisation of Polish wines produced from the multispecies hybrid and *Vitis vinifera* L. grapes. *International Journal of Food Properties*. 18, 699-713. DOI:10.1080/10942912.2013.845784. IF = 0.906, 20 pkt MNiSW
13. Socha R., Pająk P., Fortuna T., **Buksa K. 2015.** Phenolic profile and antioxidant activity of Polish meads. *International Journal of Food Properties*. 18, 2713–2725, DOI:10.1080/10942912.2015.1004588. IF = 0.906, 20 pkt MNiSW
14. **Buksa K. 2016.** Application of model bread baking in the examination of arabinoxylan—protein complexes in rye bread. *Carbohydrate Polymers*, 148, 281–289. IF = 4.074. 40 pkt MNiSW
15. Kapelko-Zeberska M., **Buksa K.,** Szumny A., Zieba T., Gryszkin A. **2016.** Analysis of molecular structure of starch citrate obtained by a well-established method. *LWT - Food Science and Technology*, 69, 334-341. IF = 2.416. 35 pkt MNiSW
16. **Buksa K.,** Nowotna A., Ziobro R. **2016.** Application of cross-linked and hydrolyzed arabinoxylans in baking of model rye bread. *Food Chemistry*, 192, 991-996. IF = 3.391. 40 pkt MNiSW
17. **Buksa K.** Praznik W., Loeppert R., Nowotna A. **2016.** Characterization of water and alkali extractable arabinoxylan from wheat and rye under standardized conditions. *Journal of Food Science and Technology*, 53(3), 1389–1398, DOI 10.1007/s13197-015-2135-2. IF = 2.203, 35 pkt MNiSW
18. Krystyjan, M., Ciesielski, W., Gumul, D., **Buksa, K.,** Ziobro, R., Sikora, M. **2017.** Physico-chemical and rheological properties of gelatinized/freeze-dried cereal starches. *International Agrophysics*, 31(3), 357-365. IF = 0.967. 20 pkt MNiSW

19. Socha, R., Pająk, P., Fortuna, T., **Buksa, K.** 2017. Antioxidant activity and the most abundant phenolics in commercial dark beers. *International Journal of Food Properties*, 20(sup1), 595-609. IF = 0.906. 20 pkt MNiSW
20. Krystyan, M., Khachatryan, G., Ciesielski, W., **Buksa, K.**, Sikora, M. 2017. Preparation and characteristics of mechanical and functional properties of starch/*Plantago psyllium* seeds mucilage films. *Starch – Stärke*, 69(11-12), 1700014. IF = 1.401, 25 pkt MNiSW
21. Litwinek D., **Buksa K.**, Gambuś H., Kowalczyk M., Boreczek J. 2017. Ocena jakości handlowych mąk całoziarnowych – pszennej orkiszowej, pszennej zwyczajnej i żytniej oraz uzyskanych z nich zakwasów spontanicznych, w: *ŻYWNOSĆ - Nauka Technologia Jakość*, Polskie Towarzystwo Technologów Żywności, vol. 24, nr 4(113), 76-89, DOI:10.15193/zntj/2017/113/212, IF = 0,311 15 pkt MNiSW
22. **Buksa, K.** 2018. Extraction and characterization of rye grain starch and its susceptibility to the resistant starch formation. *Carbohydrate Polymers*. 194, 184–192. IF = 4.074. 40 pkt MNiSW
23. **Buksa, K.**, Łakomy, A., Nowotna, A., Krystyan, M. 2018. Arabinoxylan-starch-protein interactions in specially modified rye dough during a simulated fermentation process. *Food Chemistry*. 253, 156–163. IF = 3.391. 40 pkt MNiSW
24. Litwinek D., Gambuś H., **Buksa K.**, Makarewicz M., Zięć G., Gambuś F., Kowalczyk M., Boreczek J. 2018. Jakość i proces starzenia się chlebów z razowych mąk pszennych: z pszenicy zwyczajnej i orkisz oraz z żyta, w: *ŻYWNOSĆ - Nauka Technologia Jakość*, Polskie Towarzystwo Technologów Żywności, vol. 25, nr 1(114), ss. 50-72, DOI:10.15193/zntj/2018/114/220, IF = 0,311, 15 pkt MNiSW,
25. **Buksa K.**, Krystyan M. 2019. Arabinoxylan–starch–protein interactions in specially modified rye dough during a simulated baking process. *Food Chemistry*, 287, 176–185. IF=4.946, 40 pkt MNiSW
26. Boreczek J., Litwinek D., Żylińska-Urban J., Izak D., **Buksa K.**, Gawor J., Gromadka R., Bardowski J., Kowalczyk M. 2020. Bacterial community dynamics in spontaneous sourdoughs made from wheat, spelt, and rye wholemeal flour. *MicrobiologyOpen*. 9:e1009. <https://doi.org/10.1002/mbo3.1009>
27. **Buksa, K.** 2020. Effect of pentoses, hexoses, and hydrolyzed arabinoxylan on the most abundant sugar, organic acid, and alcohol contents during rye sourdough bread production. *Cereal Chem.* 2020; 00: 1– 11. <https://doi.org/10.1002/cche.10280>