

Curriculum Vitae

Name: doc. Ing. Kateřina Tománková, Ph.D.

Date of Birth: 11/06/1981; Šternberk

Job address: Department of Medical Biophysics, Medical Faculty, Palacky University in Olomouc, Hněvotínská 3, 775 15 Olomouc

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Education:

1. 1. 2014 – Habilitation procedure – Medical Biophysics, Faculty of Medicine and Dentistry, Palacky University in Olomouc

2004 – 2007: Ph.D. programme, Department of Medical Biophysics, Faculty of Medicine and Dentistry, Palacky University in Olomouc, Czech Republic.

1999 – 2004: Master's programme, Brno University of Technology, Faculty of Chemistry, Institute of Physical and Applied Chemistry, Czech Republic.

Employment:

from 2006 - Assistant professor, Department of Medical Biophysics, Palacky University, Olomouc.

Research Specialization:

Atomic force microscopy, mechanical properties of biological materials, detection of cell damage by fluorescence methods, photophysics and photobiology of sensitizers, photodynamic and sonodynamic therapy, tissue models, cytotoxicity and phototoxicity.

Title of Ph.D. thesis: Biological Application of Atomic Force Microscopy Used on Cell Lines

Title of Habilitation thesis: Atomic Force Microscopy in Biophysical Sciences and Dentistry

Awards and Honors:

Dean's award (2007) – the best Ph.D. thesis in theoretical discipline.

2× Financial support for talented young scientists 2007, 2009 (Palacky University Internal Grant)

Grants, Projects:

4× as team member

IGA NS 9648-4. Health risk of local skin toxicity determined by alternative toxicological methods in vitro.

GAČR 202/09/1151. Focused tandem shock waves and their potential application in cancer treatment and controlled drug delivery.

GAČR P304/10/1316. In vitro and in vivo study of antimicrobial activity and toxicity of silver nanoparticles, nanocomposites and materials based on silver nanoparticles.

IGA NT/14060-3/2013. Nanotechnology and health risks for consumers.

Publications, Conferences from year 2009

Author and co-author of **26** peer-reviewed scientific articles in journals with Impact Factor, **15** peer reviewed scientific articles in journals, **5** chapter in monography, **113** conference contributions.

164 citations (WOS), 185 (SCOPUS) (without self-citations)

H-Index: 9

Membership in Scientific Societies:

Member of Society for radiobiology and crisis plan in Czech medical society of JEP.

Member of Society for medical biophysics in Czech medical society of JEP.

Pedagogical Activities:

4× Ph.D. students, 1× bachelor student, 1× diploma student, teaching Medical biophysics

Publication activity

Chapter in Monography

1. **Tomankova K.**, Kolarova H., Vujtek M., Zapletalova H. Editors: A. Mendez-Vilas, J. Díaz. Study of Cancer Cells Used Atomic Force Microscopy. Formatex - Microscopy book series. Modern research and educational topics in microscopy 3 (1), 23 - 28, 2007. ISBN-13: 978-84-611-9419-3
2. **Tomankova K.**, Kolar P., Malohlava J., Kolářová H. Mechanical Characterisation of HeLa Cells using Atomic Force Microscopy. Formatex - Microscopy book series, Current Microscopy Contributions to Advances in Science and Technology 5 (1), 549 – 554, 2012
3. Malohlava J., Zapletalova H., **Tomankova K.**, Kolarova H. Atomic force microscopy: Studying mechanical properties of a cell. Formatex - Microscopy book series, Current Microscopy Contributions to Advances in Science and Technology 5 (1), 528 – 532, 2012
4. Kaplova E., **Tomankova K.**, Kolarova H., Krejci P. Study of developmental enamel defects of permanent teeth by atomic force microscopy Formatex - Microscopy book series, Current Microscopy Contributions to Advances in Science and Technology 5 (1), 555 – 560, 2012
5. Horakova J., **Tomankova K.**, Harvanova S., Hradilova S., Masek V., Malohlava J., Malina L., Manisova B., Kejllova K., Jirova D., Kolarova H. Formatex - Microscopy book series, Current Microscopy Contributions to Advances in Science and Technology 6, 173-178, 2014

Publication in Journal with IF

1. **Tomankova K.**, Jerabkova P., Zmeskal O., Vesela M., Haderka J.: Use of Image Analysis to Study Growth and Division of Yeast Cells. The Journal of Imaging Science and Technology 50, 583 – 589, 2006, ISBN / ISSN: 1062-3701. **IF 0,522**
2. Kolarova H., Bajgar R., **Tomankova K.**, Nevrellova P., Mosinger J. Comparison of sensitizers by detecting reactive oxygen species after photodynamic reaction in vitro. Toxicology in Vitro 21, 1287 - 1291, 2007. **IF 2,045**
3. **Tomankova K.**, Kolarova H., Vujtek M., Bajgar R. Photodynamic effect on melanoma cells investigated by atomic force microscopy. General Physiology and Biophysics 26 (3), 200 - 206, 2007. **IF 0,771**
4. Kolarova H., Bajgar R., **Tomankova K.**, Krestyn E, Dolezal L, Halek J. In vitro study of reactive oxygen species production during photodynamic therapy in ultrasound-pretreated cancer cells. Physiological Research 56, 27 - 32, 2007. **IF 2,093**
5. **Tomankova K.**, Kolarova H., Bajgar R. Study of photodynamic and sonodynamic effect on A549 cell line by AFM and measurement of ROS production. Physica Status Solidi A 205, No 6, 1472 - 1477, 2008. DOI: 10.1002/pssa.200778119. **IF 1,214**
6. Mickova M., **Tomankova K.**, Kolarova H., Bajgar R., Kolar P., Sunka P., Plencner M., Jakubova R., Benes J., Kolacna L., Planka L., Necas A., Amler E. Ultrasonic shock-wave as a control mechanism for liposome drug delivery system for possible use in scaffold implanted to animals with iatrogenic articular cartilage defects. Acta Veterinaria Brno 77, 285 - 289, 2008, **IF 0,687**

7. Kolarova H., Nevrelouva P., **Tomankova K.**, Kolar P., Bajgar R., Mosinger J. Production of reactive oxygen species after photodynamic therapy by porphyrin sensitizers. *General Physiology and Biophysics* 27, 101 – 105, 2008. **IF 1,286**
8. **Tomankova K.**, Kolarova H., Bajgar R., Jirova D., Kejlova K., Mosinger J. Study of the photodynamic effect on A549 cell line by atomic force microscopy and the influence of Green Tea extract on the production of reactive oxygen species. *Annals of the New York Academy of Sciences* 1171, 549 - 558, 2009. **IF 2,303**
9. Kolarova H., **Tomankova K.**, Bajgar R., Kolar P., Kubinek R. Photodynamic and sonodynamic treatment by phthalocyanine on cancer cell lines. *Ultrasound in Medicine and Biology* 35, 1397 – 1404, 2009. **IF 2,395**
10. **Tomankova K.**, Kolarova H., Kolar P., Kejlova K., Jirova D. Study of cytotoxic effect of Photodynamically and Sonodynamically Activated Sensitizers in vitro. *Toxicology in Vitro* 23, 1465-1471, 2009. 10.1016/j.tiv.2009.07.006. **IF 2,473**
11. Krestyn E., Bajgar R., Kolarova H., **Tomankova K.** Photodynamic properties of ZnTPPS₄, ClAlPcS₂ and ALA in human melanoma G361 cells. *Toxicology in Vitro* 24, 286 – 291, 2010. doi:10.1016/j.tiv.2009.08.015, **IF 2,473**
12. Binder S., Kolarova H., **Tomankova K.**, Bajgar R., Daskova A., Mosinger J. Phototoxic effect of TPPS₄ and MgTPPS₄ on DNA fragmentation of HeLa cells. *Toxicology in Vitro* 25, 1169 – 1172, 2011, doi:10.1016/j.tiv.2010.11.005. **IF 2,060**
13. **Tomankova K.**, Kejlova K., Binder S., Daskova A., Zapletalova J., Bendova H., Kolarova H., Jirova D. *In vitro* cytotoxicity and phototoxicity study of cosmetics colorants. *Toxicology in Vitro* 25, 1242-1250, 2011. 10.1016/j.tiv.2011.04.026. **IF 2,060**
14. Prucek R., Tucek J., Kilianova M., Panacek A., Kvitek L., Filip J., Kolar M., **Tomankova K.**, Zboril R. The targeted antibacterial and antifungal properties of magnetic nanocomposite of iron oxide and silver nanoparticles. *Biomaterials* 32 (21), 4704 – 4713, 2011. **IF 7,882**
15. Maity D., Zoppellaro G., Sedenkova V., Tucek J., Safarova K., Polakova K., **Tomankova K.**, Diwocky C., Stollberger R., Machala L., Zboril R. Surface Design of Core-Shell Superparamagnetic Iron Oxide Nanoparticles Drives Record Relaxivity Values in Functional MRI Contrast Agents. *Chemical Communications* 48, 11398-11400, 2012, **IF 6,169**
16. Kolar P., **Tomankova K.**, Vujtek M., Malohlava J., Safarova K., Jancik D., Kolarova H. The effect of photodynamic treatment on the morphological and mechanical properties of the HeLa cell line. *General Physiology and Biophysics* 32, 337-346, 2013. **IF 0,852**
17. Frankova J., Pivodova V., Ruzicka F., **Tomankova K.**, Safarova K., Vrbkova J., Mazanek J., Ulrichova J. Comparing biocompatibility of gingival fibroblasts and bacterial strains on a different modified titanium discs. *Journal of Biomedical Materials Research Part A* 101, 2915-2924, 2013. **IF 2,834**
18. Lukes P., Sunka P., Hoffer P., Stelmashuk V., Pouckova P., Zadinova M., Zeman J., Dibdiak L., Kolarova H., **Tomankova K.**, Binder S., Benes J. Focused tandem shock waves in water and their potential application in cancer treatment. *Shock Waves*, 1 – 7, 2013. **IF 0,604**
19. Hanakova A., Bogdanova K., **Tomankova K.**, Binder S., Bajgar R., Langova K., Kolar M., Mosinger J., Kolarova H. Study of photodynamic effects on NIH 3T3 cell line and bacteria. *Biomedical Paper-Olomouc* 158, 201 – 207, 2014. **IF 1,661**

20. Hanakova A., Bogdanova K., **Tomankova K.**, Pizova K., Malohlava J., Binder S., Bajgar R., Langova K., Kolar M., Mosinger J., Kolarova H. The application of antimicrobial photodynamic therapy on *S. aureus* and *E. coli* using porphyrin photosensitizers bound to cyclodextrin. *Microbiological Research* 169, 163 – 170, 2014, **IF 1,99**
21. **Tomankova K.**, Kolarova H., Vachutka J., Zapletalova J., Hanakova A., Kaplova A. Study of photodynamic, sonodynamic and antioxidative influence on HeLa cell line. *Indian Journal of Biochemistry and Biophysics* 54 (1), 19-28, 2014. **IF 1,026**
22. Zoppellaro G., Kolokithas-Ntoukas A., Polakova K., Tucek J., Zboril R., Loudos G., Fragogeorgi E., Diwojky C., **Tomankova K.**, Avgoustakis K., Kouzoudis D., Bakandritsos A. Theranostics of Epitaxially Condensed Colloidal Nanocrystal Clusters, through a Soft Biomineralization Route. *Chemistry of Materials* 26 (6), 2062-2074, 2014. **IF 8,238**
23. **Tomankova K.**, Kolarova H., Pizova K., Binder S., Konecny P., Kriegova E., Malina L., Horakova J., Malohlava J., Kejlova K., Jirova D. Cytotoxicity and antioxidative effects of herbal and fruit extracts *in vitro*. *Food Biophysics* 9 (3), 267-276, 2014. **IF 1,642**
24. Datta K. K. R., Kozák O., Ranc V., Havrdová., Bourlinos A. B., Safarova K., Holá K., **Tománková K.**, Zoppellaro G., Otyepka M., Zbořil R. Quaternized Carbon Dots Modified Graphene Oxide for Selective Cell Labelling – Controlled Nucleus and Cytoplasm Imaging *Chemical Communications* 50 (74), 10782-10785, 2014. **IF 6,718**
25. **Tomankova K.**, Polakova K., Pizova K., Binder S., Havrdova M., Kolarova M., Kriegova E., Zapletalova J., Malina L., Horakova J., Malohlava J., Kolokithas-Ntoukas A., Bakandritsos A., Kolarova H., Zboril R. *In vitro* cytotoxicity analysis of doxorubicin-loaded/superparamagnetic iron oxide colloidal nanoassemblies on MCF7 and NIH3T3 cell lines. *International Journal of Nanomedicine* 2015. In press. **IF 4,195**

Review in Journal with IF

1. Pizova K., **Tomankova K.**, Daskova A., Binder S., Bajgar R., Kolarova H. Photodynamic therapy for enhancing antitumour immunity. *Biomedical Paper* 156, 93 – 102, 2012. **IF 0,702**

Publication in Journal

1. **Tománková K.**, Kolářová H., Kubínek R., Vůjtek M., Dušková H.: Mikroskopie atomárních sil v biologických aplikacích. *Československý časopis pro fyziku* 56, 340 – 345, 2006
2. **Tománková K.**, Kolář P., Malohlava J., Kolářová H. Vliv fotodynamické terapie na cytomechaniku nádorové buněčné linie HeLa. *Lékař a technika* 3, 32 – 36, 2012
3. Pížová K., **Tománková K.**, Langová K., Hanáková A., Lenobelová H., Zapletalová H., Malohlava J., Binder S., Bajgar R., Vachutka J., Doležal L., Kolářová H. Vliv ultrazvuku na účinnost fotodynamické terapie – *in vitro* studie. *Lékař a technika* 4, 18 – 22, 2012
4. Bajgar R., Kolářová H., Binder S., Dašková A., Lenobelová H., Pížová K., **Tománková K.** Imunofluorescenční analýza proapoptotických signálních molekul v buňkách lidského melanomu po fotodynamické terapii. *Lékař a technika* 43 (1), 15 – 18, 2013
5. Hanáková A., Bogdanová K., **Tománková K.**, Pížová K., Malohlava J., Binder S., Bajgar R., Langová K., Kolář M., Mosinger J., Kolářová H. Fototoxický vliv porfyrinových sensitizerů

a viditelného záření na gram-pozitivní methicilin-rezistentní kmen *S-Aureus*. Lékař a technika 43 (1), 19 – 23, 2013

6. Kaplová E., Krejčí P., **Tománková K.**, Kolářová H., Kramerová L. Vývojové poruchy zubů a jejich diagnostika pomocí RTG. Lékař a technika 43 (4), 23 – 27, 2013

Review in Journal

1. Malohlava J., **Tománková K.**, Kolář P., Kolářová H. Studium mechanických vlastností s využitím mikroskopie atomárních sil. Lékař a technika 43 (3), 5 - 9 2013

Publication in Journal from Conferences

1. Nevřelová P., Kolářová H., Bajgar R., Maceček J., Tomečka M., **Tománková K.**, Strnad M.: Measurement of reactive oxygen species after photodynamic therapy in vitro. Scripta Medica 78, 281-290, 2005
2. Tomečka M., Kolářová H., Džubák P., Bajgar R., Maceček J., Nevřelová P., **Tománková K.**, Strnad M.: Assessment of early apoptosis on tumor cell line G361 after photodynamic therapy. Scripta Medica 78, 205-210, 2005
3. Nevrelouva P., Kolarova H., Bajgar R., Macecek J., Tomecka M., **Tomankova K.** In vitro photodynamic therapy: Detection of reactive oxygen species in cancer cell lines. New frontiers in the research of PhD students. Hradec Králové, 52-57, 2005
4. **Tomankova K.**, Kolarova H., Mosinger J. Photodamage study of zinc-5,10,15,20-tetrakis(4-sulphonatophenyl)porphyrine on A549 cell lines. Metal Ions in Biology and Medicine 10, 478 - 484, 2008
5. Kolarova H., **Tomankova K.**, Kolar P. Sonodynamic and photodynamic effect induced by light, ultrasound and disulfonated chloraluminium phthalocyanine on G361 melanoma cell lines. Metal Ions in Biology and Medicine 10, 484 - 489, 2008
6. Kolar P., Kolarova H., **Tomankova K.**, Mosinger J. Photodynamic activity study of paladium(II)*meso*-tetrakis(4-sulfonatophenyl) porphyrin sensitizer on cancer cell lines A549. Metal Ions in Biology and Medicine 10, 500 - 505, 2008
7. Lukeš P., Šunka P., Hoffer P., Stelmashuk V., Beneš J., Poučková P., Zadinová M., Zeman J., Dibdiak L., Kolářová H., **Tománková K.**, Binder S.: Focused tandem shock waves in water and their potential application in cancer treatment. In: 28th International Symposium on Shock Waves. Volume 2, Part XXI: Special Session Medical and Biological Applications. Ed.: Kontis, K., Berlin Heidelberg: Springer Verlag GmbH, 839-845, 2012. ISBN 978-3-642-25684-4
8. Kolářová M., Poláková K., **Tománková K.**, Havrdová M., Marková Z., Zbořil R.. Rapid Cellular Uptake of Superparamagnetic Iron Oxide Nanoparticles by Using Low-Intensity Ultrasound. Nanocon 2013, Brno ČR 16. – 18. 10. 2013