CURRICULUM VITAE

Tomasz Piotr Kalwarczyk

Date of birth:	March 19, 1982
Place of birth:	Warsaw, Poland
Nationality:	Polish
Marital status:	Married, 1 child (3 years old)
Affiliation:	Institute of Physical Chemistry of the Polish Academy of Sciences Department of Soft Condensed Matter and Fluids Soft Condensed Matter Group Kasprzaka 44/52, 01-224 Warsaw, Poland
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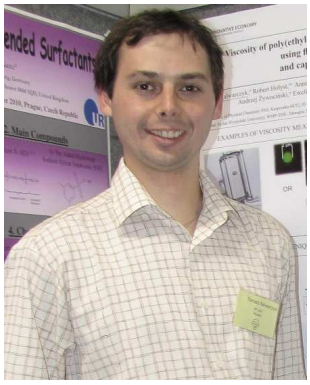

Last update: July 20, 2015

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Employment and professional experience

Employment:

(2012-present)	Assistant Professor at the Institute of Physical Chemistry of the Polish Academy of Sciences, Department of the Soft Condensed Matter and Fluids
(2007-2012)	Assistant at the Institute of Physical Chemistry of the Polish Academy of Sciences, the Department of the Soft Condensed Matter and Fluids

Education:

2007 - 2012, PhD	Institute of Physical Chemistry PAS. PhD Thesis: “From self-diffusion to scale dependent viscosity-fluorescence correlation spectroscopy studies”. Advisor Prof. dr hab. Robert Hołyst.
2005 - 2007, M.Sc.	Cardinal Stefan Wyszyński University, Chemistry.
2002 - 2005, B.Sc.	Cardinal Stefan Wyszyński University, Math, Physics and Chemistry

Professional experience:

- Training Course: “Scientific micrography: principles and applications of optical microscopy“.
- Training Course in use of Nikon A1-R confocal system.
- Training course in use of Scanning Electron Microscope Nova NanoSEM 450
- Course of Scientific text writing organised by the Foundation for Polish Science (SKILLS programme).
- Participant of the 6th European Short Course on "Time-resolved Microscopy and Correlation Spectroscopy” organised by the PicoQuant company.
- FCS training in the Molecular Biophysics Laboratory, Faculty of Physics, A. Mickiewicz University, Umultowska 85, 61-614 Poznan, Poland (two weeks).

Scientific activity

h-index (according to ISI web of Knowledge):	9
Number of citations (according to ISI web of Knowledge):	203
h-index (according to Google Scholar):	9
Number of citations (according to Google Scholar):	292

List of Papers

[1] Tomasz Kalwarczyk, Krzysztof Sozanski, Anna Ochab-Marcinek, Jedrzej Szymanski, Marcin Tabaka, Sen Hou, and Robert Holyst. Motion of nanoprobes in complex liquids within the framework of the length-scale dependent viscosity model. *Advances in Colloid and Interface Science*, pages –, 2015.

[2] Jinglin Shen, Jinyu Pang, Tomasz Kalwarczyk, Robert Holyst, Xia Xin, Guiying Xu, Xiaoyu Luan, and Yingjie Yang. Manipulation of multiple-responsive fluorescent supramolecular materials based on inclusion complexation of cyclodextrins with tyloxapol. *Journal of Materials Chemistry C*, 2015.

[3] Xuzhu Zhang, Andrzej Poniewierski, Sen Hou, Krzysztof Sozański, Agnieszka Wisniewska, Stefan A Wieczorek, Tomasz Kalwarczyk, Lili Sun, and Robert Hołyst. Tracking structural transitions of bovine serum albumin in surfactant solutions by fluorescence correlation spectroscopy and fluorescence lifetime analysis. *Soft matter*, 11(12):2512–2518, 2015.

[4] Marcin Tabaka, Tomasz Kalwarczyk, Jedrzej Szymanski, Sen Hou, and Robert Holyst. The effect of macromolecular crowding on mobility of biomolecules, association kinetics and gene expression in living cells. *Frontiers in Physics*, 2(54), 2014.

[5] Agnieszka Wisniewska, Krzysztof Sozanski, Tomasz Kalwarczyk, Karolina Kedra-Krolik, Christoph Pieper, Stefan A Wieczorek, Slawomir Jakiela, Jörg Enderlein, and Robert Holyst. Scaling of activation energy for macroscopic flow in poly (ethylene glycol) solutions: Entangled–non-entangled crossover. *Polymer*, 2014.

[6] Tomasz Kalwarczyk, Krzysztof Sozanski, Slawomir Jakiela, Agnieszka Wisniewska, Ewelina Kalwarczyk, Katarzyna Kryszczuk, Sen Hou, and Robert Holyst. Length-scale dependent transport properties of colloidal and protein solutions for prediction of crystal nucleation rates. *Nanoscale*, 6(17):10340–10346, 2014.

[7] Sen Hou, Marcin Tabaka, Lili Sun, Piotr Trochimczyk, Tomasz S Kaminski, Tomasz Kalwarczyk, Xuzhu Zhang, and Robert Holyst. A flexible fluorescence correlation spectroscopy based method for quantification of the DNA double labeling efficiency with precision control. *Laser Physics Letters*, 11(8):085602, 2014.

[8] Sen Hou, Lili Sun, Stefan A Wieczorek, Tomasz Kalwarczyk, Tomasz S Kaminski, and Robert Holyst. Fluorescence correlation spectroscopy analysis for accurate determination of proportion of doubly labeled dna in fluorescent dna pool for quantitative biochemical assays. *Biosensors and Bioelectronics*, 51:8–15, 2014.

[9] Marcin Tabaka, Tomasz Kalwarczyk, and Robert Hołyst. Quantitative influence of macromolecular crowding on gene regulation kinetics. *Nucleic acids research*, 42(2):727–738, 2014.

[10] Dawid Kaluza, Wojciech Adamiak, Tomasz Kalwarczyk, Krzysztof Sozanski, Marcin Opallo, and Martin Jönsson-Niedziolka. Anomalous effect of flow rate on the electrochemical behavior at a liquid| liquid interface under microfluidic conditions. *Langmuir*, 29(51):16034–16039, 2013.

[11] Krzysztof Sozański, Agnieszka Wiśniewska, Tomasz Kalwarczyk, and Robert Hołyst. Activation energy for mobility of dyes and proteins in polymer solutions: From diffusion of single particles to macroscale flow. *Physical review letters*, 111(22):228301, 2013.

[12] Hongguang Li, Xia Xin, Tomasz Kalwarczyk, Robert Hołyst, Jingfei Chen, and Jingcheng Hao. Structural evolution of reverse vesicles from a salt-free catanionic surfactant system in toluene. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 436:49–56, 2013.

[13] Ewelina Kalwarczyk, Natalia Ziębacz, Tomasz Kalwarczyk, Robert Hołyst, and Marcin Fiałkowski. A “wrap-and-wrest” mechanism of fluorescence quenching of cdse/zns quantum dots by surfactant molecules. *Nanoscale*, 5(20):9908–9916, 2013.

[14] Marcin Tabaka, Lili Sun, Tomasz Kalwarczyk, and Robert Hołyst. Implications of macromolecular crowding for protein–protein association kinetics in the cytoplasm of living cells. *Soft Matter*, 9(17):4386–4389, 2013.

[15] Tomasz Kalwarczyk, Marcin Tabaka, and Robert Holyst. Biologistics—diffusion coefficients for complete proteome of escherichia coli. *Bioinformatics*, 28(22):2971–2978, 2012.

[16] Xia Xin, Marek Pietraszkiewicz, Oksana Pietraszkiewicz, Olga Chernyayeva, Tomasz Kalwarczyk, Ewa Gorecka, Damian Pociecha, Hongguang Li, and Robert Hołyst. Eu (iii)-coupled luminescent multi-walled carbon nanotubes in surfactant solutions. *Carbon*, 50(2):436–443, 2012.

[17] Katarzyna Winkler, Maciej Paszewski, Tomasz Kalwarczyk, Ewelina Kalwarczyk, Tomasz Wojciechowski, Ewa Gorecka, Damian Pociecha, Robert Holyst, and Marcin Fialkowski. Ionic strength-controlled deposition of charged nanoparticles on a solid substrate. *The Journal of Physical Chemistry C*, 115(39):19096–19103, 2011.

[18] Tomasz Kalwarczyk, Natalia Ziebacz, Anna Bielejewska, Ewa Zaboklicka, Kaloian Koynov, Jędrzej Szymański, Agnieszka Wilk, Adam Patkowski, Jacek Gapiński, Hans-Jürgen Butt, et al. Comparative analysis of viscosity of complex liquids and cytoplasm of mammalian cells at the nanoscale. *Nano letters*, 11(5):2157–2163, 2011.

[19] Natalia Ziębacz, Stefan A Wieczorek, Tomasz Kalwarczyk, Marcin Fiałkowski, and Robert Hołyst. Crossover regime for the diffusion of nanoparticles in polyethylene glycol solutions: influence of the depletion layer. *Soft Matter*, 7(16):7181–7186, 2011.

[20] Sen Hou, Natalia Ziebacz, Tomasz Kalwarczyk, Tomasz S Kaminski, Stefan A Wieczorek, and Robert Holyst. Influence of nano-viscosity and depletion interactions on cleavage of dna by enzymes in glycerol and poly (ethylene glycol) solutions: qualitative analysis. *Soft Matter*, 7(7):3092–3099, 2011.

[21] Sen Hou, Natalia Ziebacz, Stefan A Wieczorek, Ewelina Kalwarczyk, Volodymyr Sashuk, Tomasz Kalwarczyk, Tomasz S Kaminski, and Robert Holyst. Formation and structure of pei/dna complexes: quantitative analysis. *Soft Matter*, 7(15):6967–6972, 2011.

[22] Hongguang Li, Xia Xin, Tomasz Kalwarczyk, Ewelina Kalwarczyk, Patrycja Niton, Robert Hołyst, and Jingcheng Hao. Reverse vesicles from a salt-free catanionic surfactant system: a confocal fluorescence microscopy study. *Langmuir*, 26(19):15210–15218, 2010.

[23] Hongguang Li, Stefan A Wieczorek, Xia Xin, Tomasz Kalwarczyk, Natalia Ziebacz, Tomasz Szymborski, Robert Hołyst, Jingcheng Hao, Ewa Gorecka, and Damian Pociecha. Phase transition in salt-free catanionic surfactant mixtures induced by temperature. *Langmuir*, 26(1):34–40, 2009.

[24] Robert Holyst, Anna Bielejewska, Jędrzej Szymański, Agnieszka Wilk, Adam Patkowski, Jacek Gapiński, Andrzej Żywociński, Tomasz Kalwarczyk, Ewelina Kalwarczyk, Marcin Tabaka, et al. Scaling form of viscosity at all length-scales in poly (ethylene glycol) solutions studied by fluorescence correlation spectroscopy and capillary electrophoresis. *Physical Chemistry Chemical Physics*, 11(40):9025–9032, 2009.

[25] Tomasz Kalwarczyk, Natalia Ziebacz, Marcin Fiałkowski, and Robert Hołyst. Late stage of the phase-separation process: Coalescence-induced coalescence, gravitational sedimentation, and collective evaporation mechanisms. *Langmuir*, 24(13):6433–6440, 2008.

[26] Tomasz Kalwarczyk, Natalia Ziebacz, Stefan A Wieczorek, and Robert Holyst. Kinetics and dynamics of dissolution/mixing of a high-viscosity liquid phase in a low-viscosity solvent phase. *The Journal of Physical Chemistry B*, 111(41):11907–11914, 2007.

List of Patent applications:

- Maciej Paszewski, Marcin Fiałkowski, Ewelina Kalwarczyk, Tomasz Kalwarczyk, Katarzyna Winkler, Robert Hołyst; EN.700114.GB “Method of coating material surfaces with nanoparticles”,
- Sen Hou, Lili Sun, Stefan A. Wieczorek, Tomasz Kalwarczyk, Tomasz S. Kaminski, Robert Hołyst; P.402764; “Sposób wyznaczania wydajności podwójnego znakowania dwuniciowego DNA barwnikiem fluorescencyjnym z zastosowaniem spektroskopii korelacji fluorescencji oraz jego zastosowanie w analizie biochemicznej”

List of Patents:

- Maciej Paszewski, Marcin Fiałkowski, Ewelina Kalwarczyk, Tomasz Kalwarczyk, Katarzyna Winkler, Robert Hołyst; P-391217 “Metoda pokrywania powierzchni nanocząstkami”

Conferences:

- "9th Liquid matter conference" - 21-25 VII, Lisbon, Portugal,
- "International Soft Matter Conference 2013" - 15-19 IX, Rome, Italy,
- "Biomolecules and Nanostructures 4" - 15-19 V 2013,
- "25th Marian Smoluchowski Symposium on Statistical Physics" - Krakow IX 2012,
- 17th International Workshop on "Single Molecule Spectroscopy and Ultrasensitive Analysis in the Life Sciences" - Berlin, Germany 7-9 IX 2011,
- "24th Conference of the European Colloid and Interface Society" - Prague, Chech Republic 5-10 IX 2010,
- "22nd Marian Smoluchowski Symposium on Statistical Physics" - IX 2009,
- "SCALES EUROCORE SONS MEETING" - VII 2009,
- " Confocal microscopy workshop" Marceli Nencki Instytute of experimental Biology 19.11.2008,
- SONS II "Self-Organised NanoStructures in Liquid Crystals" - Cetraro, Italy, IX 2008,
- ChemSession'08 Warsaw, V 2008,
- CODEF II "Colloidal Dispersions in External Fields" - IV 2008,
- 20th Marian Smoluchowski Symposium on Statistical Physics - IX 2007,
- 2nd Warsaw School of Statistical Physics - VI 2007,

Given talks:

- 13 I 2015 "Length-scale dependent transport properties of colloidal solutions" – Microsympusium, Institute of Physical Chemistry PAS
- 22 XI 2013 "Size matters motion in complex fluids" – Seminar of the Statistical Physics, Warsaw University,
- 16 IX 2013 "Lenght-scale dependent viscosity and (macro)molecular diffusion in complex fluids and in cytoplasm of living cells" – "International Soft Matter Conference 2013", Rome, Italy,
- 4 I 2012 "Comparative analysis of viscosity of complex liquids and cytoplasm of mammalian cells at the nanoscale" – Microsympusium, Institute of Physical Chemistry PAS,
- 7 XI 2011 "Diffusion in complex fluids and viscosity at the nano scale" – Seminar of the Mark Kac Complex Systems Research Centre Jagiellonian University , Krakow,
- 7 VII 2009 "Tracing of Single Nano Objects as a Tool for Viscosity Measurements in Polymer Solutions" – "SCALES EUROCORE SONS MEETING" VII 2009,
- 7 I 2008 "Late stage of phase separation" – Microsympusium, Institute of Physical Chemistry PAS,

Participation in research projects:

- Project no. DEC-2013/08/W/NZ1/00687, **Reasercher**, "Novel quantitative research methods in vivo: measurement of protein mobility and interactions with structures such as glycogen and mitochondria" (polish title: "Nowatorskie badania ilościowe w komórce in vivo: pomiary mobilności białek i oddziaływania białek z takimi strukturami wewnątrzkomórkowymi jak glikogen i mitochondria"), 2013-.
- Project no. IP2012 015372, **Project Leader**, "Analysis of the viscosity of bacterial lysates at the nano- and macroscopic length-scale" (polish title: "Analiza lepkości lizatów bakteryjnych w skali nano- i makroskopowej"), 2013-2015.
- Project no. IP2011 021771, **Project Leader**, "Studies of the activation energy for diffusion of proteins in aqueous solutions of polyethylene glycol" (polish title: "Badania energii aktywacji dyfuzji białek w wodnych roztworach glikolu polietylenowego"), 2012-2013.
- Project no. 2011/01/N/ST3/00865, **Project Leader**, "Analysis of the viscosity of protein solutions at the nano- and macroscopic length-scale" (polish title: "Analiza lepkości roztworów białek w nano i makro skali"), 2011-2013.
- Project no. 2011/01/D/ST3/00751, **Reasercher**, "The crossover from nano- to macroviscosity for diffusion of nanoparticles in a crowded environment: Theoretical and experimental studies of the depletion layer effect" (polish title: "Przejście od nano- do makrolepkości w dyfuzji nanocząstek w zatłoczonym środowisku: Teoretyczne i doświadczalne badania efektu warstwy zubożonej"), 2011-2014.
- Project no. 2011/03/D/ST4/05258, **Reasercher**, "Effect of reaction space available on the activity of the individual enzyme molecules enclosed in the liposome-type structures" (polish title: "Wpływ dostępnej przestrzeni reakcyjnej na aktywność pojedynczych cząsteczek enzymów umieszczonych w strukturach zamkniętych typu liposomu"), 2011-2014.
- Project nr POIG.02.02.00-00-025/09, **Reseercher, Laboratory supervisor**, "National Multidisciplinary Laboratory of Functional Nanomaterials NanoFun".

- Project no. TEAM 2008-2/2 (2009-2013), **Researcher, PhD student**, “From nano to macroscale: motion of proteins, protein charge ladders and nanoparticles in complex liquids”. The Project operated within the Foundation for Polish Science Team Programme co-financed by the EU “European Regional Development Fund”.
- **Researcher, Ph.D student** “Physical Chemistry Inspired by Biology and Nanotechnology”, The Project operated within the Foundation for Polish Science “MISTRZ” programme 2008-2010.
- Project nr POIG.01.01.02-00-008/08 **Researcher**, “Quantum semiconductor nanostructures for applications in biology and medicine”. the Operational Programme Innovative Economy, 2007-2013.

Revisions and teaching

Reviewer of:	Bioinformatics
	The Journal of Physical Chemistry
	RSC Advances
Teaching:	Laboratory exercises (Cardinal Stefan Wyszynski University)

Awards and prizes:

2014	Young researchers award, IPC PAS
2013	Young researchers award, IPC PAS
	Awarded the *Iuventus Plus* grant from the Polish Ministry of Science and Higher Education, grant No. IP2012 015372, entitled: *Analysis of the viscosity of bacterial lysates at the nano- and macroscopic length-scale* (2013-2015).
2012	Laureate of the START programme of the Foundation for Polish Science
	Young researchers award, IPC PAS
2011	Awarded the *Iuventus Plus* grant from the Polish Ministry of Science and Higher Education, grant No. IP2011 021771 entitled: *Studies of the activation energy for diffusion of proteins in aqueous solutions of polyethylene glycol* (2012-2013).
	Awarded the *Preludium* grant from the Polish National Science Centre, grant No. 2011/01/N/ST3/00865 entitled: *Analysis of the viscosity of protein solutions at the nano- and macroscopic length-scale* (2011-2013)
	Young researchers award, IPC PAS
2008	Janina Janikowa Award of the Polish Chemical Society for the best master thesis in 2007 (first price)

Skills

Languages

- Polish - native
- English - very good

Experimental techniques and equipment

- Fluorescence Correlation Spectroscopy (FCS) technique.
- The use of Nikon C1 confocal microscope equipped with the PicoQuant LSM Upgrade Kit with PicoHarp 300.
- The use of Nikon A1-R confocal microscope equipped with the PicoQuant LSM Upgrade Kit with PicoHarp 300.
- Work with complex fluids (polymer solutions or surfactant solutions),
- Optical and fluorescence microscopy,

Software and programming

- Linux operating system,
- LaTeX typesetting system,
- Basics of C/C++ programming,
- Scientific graphing and data analysis software: Gnuplot, Origin
- Office software: Open/Libre office, Microsoft office,
- Computer graphics software: GIMP, Inkscape, Blender (3D modeling and animation software).

References

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