# Association morphologies of amphiphilic polyelectrolyte diblock copolymers

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# Curriculum Vitae

I was born on the 15th of April 1970 in Tyshkivka, a quiet village between Kiev and Odessa in the middle of the Ukraine. Ten years of my life, from 1977 till 1987, were spent at the Secondary School # 2. A new generation of teachers, who arrived at the school in the beginning of 1980, brought a lot of enthusiasm and inspiration, and showed life from a bright prospective for the next decade. Long hours of lab time and at the school's telescope turned my interests away from social sciences and humanities and I was absorbed by Physics, Mathematics, and Astronomy. At some moment I realized that school is just the beginning of a life-long adventure in exploring nature, and in 1987 I entered the Faculty of Physics and Astronomy of Odessa State University. During my education in the period 1987-1992, I enjoyed the academic atmosphere and many other aspects of the university's life. Besides studying, I was involved in several research projects. These projects introduced me into the Sciences, but they also gave some money to make me a bit more independent from my parents, who always supported me. My teaching activity was boosted by the "Advanced courses in physics and mathematics for students of sunday school" (guided by Department of Theoretical Physics), where I learned the ability to teach and where I also made many friends. My master research was conducted at the Department of Chemical Physics, under the supervision of Dr. E.N. Kondratyev. After getting my Master degree with the thesis "Dynamics of reactive systems close to the criticality" and passing all necessary examinations I was admitted to the PhD program at the Physics Faculty of Odessa University (1992-1995), supervisor Dr. E.N. Kondratyev. Here, my research focused on the "Dynamics of ignition and combustion of exothermically reacting systems". In 1995 I was appointed as a researcher at the Institute of Combustion & Advanced Technologies, Department of Mathematical Modelling and headed by Prof. V.G. Shevchuk. The department was created to assist the experimentalists, which were located next door, to develop mathematical models

and methods of diagnostics of reactive systems. In the late spring of 1998, I joined the group of Prof. J. Mellema, University of Twente, as a research fellow, where my research topic was “Coalescence of droplets at high volume fractions”. By the end of 2000, I started working for the present PhD thesis project. I am delighted to have attended several Dutch, Ukrainian, and international conferences held in Lunteren, Odessa, Irvine (25th Symposium on Combustion, 1994), Denver, Cracow, Heidelberg (15th, 16th, and 17th ICDERS meetings), Evora (Chains and Interfaces, 2001), Lund (Polyelectrolytes 2002), Konstantz (5th Liquid Matter Conference, 2002), and Bayreuth (BPS, 2003).

# Acknowledgments

It is difficult to mention all the people, who, in one way or another, were involved in my research and who gave me full support. Nevertheless, I will try to mention them, and to summarize the experiences we have shared.

It is a great pleasure to mention my supervisors from Odessa State University. The years spent in Odessa, my first research projects and my first scientific inspiration will be forever associated with Dr. E.N. Kondratyev and Prof. A.N. Zolotko. Experiments conducted during nights, the long discussions about specificity of different models of combustion not only immersed me into the Sciences, but also kept me away from the reality of post Soviet time.

My roommates and fellows of different groups and universities (Soft Condensed Matter, Solid State NMR, Astrobiology, Surface and Interfaces, Biophysics and Complex Fluids (National University of Singapore) groups, and the Group of Molecular Genetics) have created a friendly atmosphere in which it was always a great pleasure to carry out my research. Their support and numerous helpful discussions are highly appreciated. I will always remember what I have learned from them, as well as the numerous indoor and outdoor activity events.

During last years, I have a great opportunity to work with Wim Jesse, whose knowledge and skills of chemistry has made my research much more successful, my lab-life much easier, and has helped me to achieve our targets much faster. Together with Prof. Dr. Stefan Egelhaaf (now at the University of Duesseldorf) and Dr. Alain Lapp (Laboratoire Leon Brillouin), I have shared the beauty of doing the X-ray and neutron scattering at the European Synchotron Radiation Facility and the Institute Laue Langevin, Grenoble, as well as the Laboratoire leon Brillouin, Centre d'Etudes Nucleaires, Saclay. Furthermore, I enjoyed their great company, friendship, and, with them, French cuisine. I learned many things from them, in particular how to extract the scattering profiles from the raw data, without which it was not possible to achieve

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My continuous efforts to study Dutch and English would have been completely disastrous without Petra Couvee and Antony Foster. Their excellent way to conduct their classes, friendly environment and after-class multicultural social activity motivated me to raise my language skills.

I am grateful for the opportunity to spend a month at the Physics Department of the National University of Singapore, in order to finalize this thesis. Thanks are due to Prof. Choo Hiap Oh, then Head of the Physics Department, for hosting my stay and to Mr. Teo Hoon Hwee for organizing my lodging and expression of his concerns afterwards. The cultural exchange and life in Singapore would have been much tougher and less enjoyable without the support from Pascale van der Maarel.

The life in the Netherlands turned out for me to be more enjoyable with my new Ukrainian friends: Roma and Oksana Stepanyan, Katya Lyakhova and Kostya Gylevich, Valeria Ratushnaya, Andriy Kyrylyuk, Kostya and Lyuda Shundyak. They gave me not only much appreciated friendship, but also tiny ties with the motherland, enriched myself with new experiences and ideas, and added a bit of the East European

reality into my West European life.

Special thanks to Dr. Agur Sevink, who not only helped with Dutch translation of the Samenvatting, but was also always ready to answer queries of any sort. It was also great to communicate with Dr. Edgar Blokhuis, and to appreciate his valuable comments and knowledge of the university rules.

I would like to mention my oldest, but not old, friends who are always around somewhere and who keep me inside their net of alliance. I admire Andrei Zvelindovsky for his friendship for almost 20 years, his moral and practical support, and for keeping my mood up enough to continue my research. I appreciate the friendship of Misha and Marina Shcherb, and fun during gatherings on many occasions. I would also like to mention my closest friend Sergey Mashchenko, and his family, who are on the other side of the Atlantic but always near when their help is required.

My research in Leiden would not have been possible without my parents, Raisa and Viktor Korobko, my brother Yura, sister Olya, their families, my parents in law, and my big family behind me, who always take care of each other. Well, they gave me some extra freedom and a relatively steady state to let me pursue my research.

I can't imagine the successful accomplishment of this thesis without continuous support from my wife Oksana and daughter Emily. Their passion and love gave me the strength for the research and a safe harbor when the shelter is needed, believe that some day this thesis will be a piece of history, and their husband and father will be back to normal life and behavior. But forever, this thesis is my time taken from my family, their lonely stay away from me, my inappropriate behavior and many other things, which should not have happened. Therefore, I have dedicated this Thesis to those who I love and those who love me the most.

# Publications

1. Korobko, A.V., Jesse, W., Egelhaaf, S.U., Lapp, A., and van der Maarel, J.R.C. Physical Review Letters, 93, 177801, 2004

2. Korobko, A.V., Jesse, W., Lapp, A., Egelhaaf, S.U., and van der Maarel, J.R.C. The Journal of Chemical Physics, 122, 024902, 2005

3. Korobko, A.V., Jesse, W., and van der Maarel, J.R.C. Langmuir, 21, 34, 2005

4. Korobko, A.V., Backendorf, C., and van der Maarel, J.R.C. Journal of Physical Chemistry B, 110, 14550, 2006

5. Korobko, A.V., van den Ende, D., Agterof, W.G.M., and Mellema, J. The Journal of Chemical Physics, 123, 204908, 2005

6. Kornilov, V.N., Korobko, A.V., Kondratyev, E.N. Combustion and Flame, 146, 530, 2006