

Curriculum Vitae

Orlin D. Velev

INVISTA Professor

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Professional Preparation

Chemical Engineering, University of Delaware, Post-doctoral Fellow	1996-1998
University of Sofia and Bulgarian Academy of Sciences, Ph.D. in Physical Chemistry	1996
University of Sofia, BS and M.Sc. in Chemical Physics and Theoretical Chemistry	1989

Appointments

2009-	INVISTA Professor, Chemical and Biomolecular Engineering, NC State University
2008-	Professor, Chemical and Biomolecular Engineering, North Carolina State University
2006- 2008	Associate Professor, Chemical and Biomol. Eng., North Carolina State University
2001- 2006	Assistant Professor, Dept. of Chemical Engineering, NC State University
1998- 2001	Research Assistant Professor, Dept. of Chemical Engineering, Univ. of Delaware
1994-1995	Researcher, Nagayama Protein Array Project, Japanese Exploratory Research for Advanced Technology program, Tsukuba, Japan
1993-1994	Research and teaching fellow, Laboratory of Thermodynamics and Physico-Chemical Hydrodynamics (LTPH), University of Sofia, Bulgaria

Professional Awards and Honors

Chancellors' Innovation Fund Award, NC State University	2016.
Springer 1st Colloid and Polymer Science Lecture Award	2014
NC ACS 2013 Distinguished Speaker Award (NC ACS Section)	2013
Alumni Distinguished Undergraduate Professor (NCSU)	2013
Fellow of the American Chemical Society (ACS)	2011
Innovator of the Year Award (NC State University)	2011
Alumni Association Outstanding Research Award (NCSU)	2011
Alcoa Foundation Distinguished Engineering Research Award (NCSU)	2010
NC State Univ. recognition for innovation and launching a startup company	2010
INVISTA named professorship (NC State University)	2009
Camille Dreyfus Teacher-Scholar Award (Camille and Henry Dreyfus Foundation)	2006
NC State University Academy of Outstanding Teachers	2006
3M Nontenured Faculty Award (3M Company)	2006
Sigma Xi Faculty Research Award (Sigma Xi NCSU Chapter)	2004
CAREER award (The National Science Foundation)	2003
Ralph E. Powe Junior Faculty Award (Oak Ridge Associated Universities)	2002
Camille and Henry Dreyfus New Faculty Award (Camille and Henry Dreyfus Found.)	2001

Synergistic Activities and Scholarly Achievements Metrics

- **175** peer-reviewed publications, including ones in *Nature*, *Science*, *Nature Mater.*, *Nature Nanotech.*, *Adv. Mater.*, *JACS*, etc.
- More than **12,200** citations reported by Web of Science Database. **H-index = 52**.
- PhD students advised or advising = **29** (of which **7** co-advised, **11** female). Post-doctoral researchers and visiting scientists = **18**. Undergraduate researchers advised or advising = **67** (including **11** minority, **22** female).
- Developed and taught new graduate and undergraduate level courses: *Colloid Science and Nanoscale Engineering* and *Special Topics in Nanoscience*, both at NC State University and TU-Berlin.

Presentations at conferences, invited seminars and lectures

- **217** invited, keynote and plenary presentations at scientific meetings, companies, universities and government labs.
- **27** regular presentations at scientific conferences and meetings. More than **170** presentations and posters by Velev students, postdocs and collaborators.
- Velev's work has been highlighted in more than **150** press releases and articles in the mass media.

Selected outreach and entrepreneurial activities

- Member of the team launching an NC State spinout startup company, Xanofi, based on Velev's technology, October 2010 - present (www.xanofi.com).
- Co-founder and President, Benanova, NC State spinout startup company, based on Velev group's technology, and launched by Alexander Richter, a Velev PhD student, March 2013 (www.benanova.com).
- Participating faculty in the NCSU Initiative for Maximizing Student Diversity (IMSD), advising and mentoring undergraduate researchers from underrepresented minorities (2008 - present).

Scientific service – editorial and organizational activities

- Section Editor ("Colloidal Dispersions" and the new "Active Colloids" section), *Current Opinion in Colloid and Interface Science*, 2009 – present.
- Member of the Editorial Board, *Biomicrofluidics* (American Institute of Physics), 2006 – present.
- Member of the Editorial Advisory Board, *Langmuir* (ACS), 2008 – present.
- Member of the Editorial Advisory Board, *Chemistry of Materials* (ACS), 2008 – 2015.
- Member of the Editorial Advisory Board, *Particle* (Wiley-VCH), 2012 – present.
- Member of the Editorial Advisory Board, *Advances in Colloid and Interface Science* (Elsevier), 2012 – 2015.
- Member of the American Chemical Society (ACS), American Institute of Chemical Engineers (AIChE), Royal Society of Chemistry (RSC), European Colloid and Interface Society (ECIS).
- Reviewer for 31 scientific journals, proposal reviewer for 13 US and international agencies
- Leader of Interdisciplinary Research Group 1 (IRG 1) and member of the Steering Committee of the Triangle MRSEC on Programmable Soft Matter 2011 – present.
- Chair and Host (together with P.K. Kilpatrick) of the 82nd ACS International Colloid and Surface Science Symposium at North Carolina State University, June 2008; Symposium organizer at the 2010, 2007, 2005 and 2003 Spring MRS meetings; Session organizer at the 2012, 2009, 2006 and 2004 ACS Colloids meeting; Organizer and chair of 7 sessions at AIChE meetings 2005-2015, many others.

Selected Research Publications (out of 171)

1. B. Bharti, A.-L. Fameau, M. Rubinstein and O. D. Velev, *Nature Mater.*, **14**, 1104-1109 (2015). Nanocapillarity-mediated magnetic assembly of nanoparticles into ultraflexible filaments and reconfigurable networks.
2. A. P. Richter, J. S. Brown, B. Bharti, A. Wang, S. Gangwal, K. Houck, E. A. Cohen Hubal, V. N. Paunov, S. D. Stoyanov and O. D. Velev, *Nature Nanotech.*, **10**, 817-823 (2015). Nanoengineered antimicrobial nanoparticles with environmentally benign cores infused by silver ions.
3. B. Bharti and O. D. Velev, *Langmuir*, **31**, 7897-7908 (2015). Assembly of reconfigurable colloidal structures by multi-directional field-induced interactions. *Invited feature article, ACS Editor's Choice*.
4. E. Palleau, D. Morales, M. D. Dickey and O. D. Velev, *Nature Comm.*, **4**, 2257, 1-7 (2013). Reversible patterning and actuation of hydrogels by electrically assisted ionoprinting.
5. A.-L. Fameau, S. Lam and O. D. Velev, *Chem. Sci.*, **4**, 3874–3881 (2013). Multi-stimuli responsive foams combining particles and self-assembling fatty acids.
6. H.-J. Koo and O. D. Velev, *Biomicrofluidics*, **7**, 031501, 1-10 (2013). Ionic Current Devices – Recent Progress in the Merging of Electronic, Microfluidic and Biomimetic Structures.
7. B. Bharti, G. H. Findenegg and O. D. Velev, *Sci. Rep. (Nature)*, **2**:1004 1-4 (2012). Co-assembly of oppositely charged particles into linear clusters and chains of controllable length.
8. R. Sharma, S.-T. Chang and O. D. Velev, *Langmuir*, **28**, 10128–10135 (2012). Gel-based self-propelling particles get programmed to dance.
9. S. Lam, E. Blanco, S. Smoukov, K. P. Velikov, O. D. Velev, *J. Am. Chem. Soc.*, **133**, 13856–13859 (2011). Magnetically Responsive Pickering Foams.
10. H.-J. Koo, S. T. Chang, J. M. Slocik, R. R. Naik and O. D. Velev, *J. Mater. Chem.*, **21**, 72-79 (2011). Aqueous soft matter based photovoltaic devices.
11. S. Gangwal, O. J. Cayre, M. Z. Bazant, O. D. Velev, *Phys. Rev. Lett.*, **100**, 058302, 1-4 (2008). Induced-charge electrophoresis of metallo-dielectric particles.
12. S.-T. Chang, V. N. Paunov, D. N. Petsev and O. D. Velev, *Nature Mater.*, **6**, 235-240 (2007). Remotely powered self-propelling particles and micropumps based on miniature diodes.
13. O. J. Cayre, S.-T. Chang and O. D. Velev, *J. Am. Chem. Soc.* **129**, 10801-10806 (2007). Polyelectrolyte diode - nonlinear current response of a junction between aqueous ionic gels.
14. J. R. Millman, K. H. Bhatt, B. G. Prevo and O. D. Velev, *Nature Mater.*, **4**, 98-102 (2005). Anisotropic particle synthesis in dielectrophoretically controlled microdroplet reactors.
15. O. D. Velev, B. G. Prevo and K. H. Bhatt, *Nature*, **426**, 515-516 (2003). On-chip manipulation of freely suspended droplets.
16. K. D. Hermanson, S. O. Lumsdon, J. P. Williams, E. W. Kaler and O. D. Velev, *Science*, **294**, 1082-1086 (2001). Dielectrophoretic assembly of electrically functional microwires from nanoparticle suspensions.
17. O. D. Velev, A. M. Lenhoff and E. W. Kaler, *Science*, **287**, 2240-2243 (2000). A class of microstructured particles through colloidal crystallization.
18. O. D. Velev, P. M. Tessier, A. M. Lenhoff and E. W. Kaler, *Nature*, **401**, 548-548 (1999). A class of porous metallic nanostructures.
19. O. D. Velev, T. A. Jede, R. F. Lobo and A. M. Lenhoff, *Nature*, **389**, 447-448 (1997). Microstructured porous silica via colloidal crystallization.
20. N. D. Denkov, O. D. Velev, P. A. Kralchevsky, I. B. Ivanov, H. Yoshimura and K. Nagayama, *Nature*, **361**, 26-26 (1993). Dynamics of two-dimensional crystallization.