

List of Publications, Kristine Niss

Articles published in peer reviewed journals

1. Mapping Isobaric Aging onto the Equilibrium Phase Diagram, **K. Niss**, *Phys. Rev. Lett.* **119**, 115703 (2017)
2. Coupling between Molecular Mobility and Kinetics of Crystal Growth in a Hydrogen-Bonded Liquid
A. Sanz and **K. Niss**, *J. Cryst. Growth & Design* **17** (9), 4628-4636 (2017)
3. Variation along liquid isomorphs of the driving force for crystallization
U. R. Pedersen, K. Adrjanowicz, **K. Niss** and Nicholas P. Bailey, *SciPost Physics*, **2**, 022 (2017).
4. Liquid dynamics in partially crystalline glycerol,
A. Sanz and **K. Niss**, *J. Chem. Phys.*, **146**, 044502 (2017)
5. Connection between fragility, mean-squared displacement and shear modulus in two van der Waals bonded glass-forming liquids,
H. W. Hansen, B. Frick, T. Hecksher, J. C. Dyre and **K. Niss**, *Phys. Rev. B*, **95**, 104202 (2017).
6. Changing tendency to crystallize of glass-forming liquid by moving along different iso-Lines in the T_p phase diagram
K. Adrjanowicz, K. Koperwas, M. Tarnacka, K. Grzybowska, **K. Niss**, J. Pionteck, M. Paluch, *J. Cryst. Growth & Design* **16**, 6263 (2016)
7. Thermalization calorimetry: A simple method for investigating glass transition and crystallization of supercooled liquids, B. Jakobsen, A. Sanz, **K. Niss**, T. Hecksher, I. H. Pedersen, T. Rasmussen, T. Christensen, N. B. Olsen and J. C. Dyre,
AIP Advances **6**, 055019 (2016).
8. Communication: High pressure specific heat spectroscopy reveals simple relaxation behavior of glass forming molecular liquid,
L. A. Roed, **K. Niss**, and B. Jakobsen, *J. Chem. Phys.*, **143**, 221101 (2015).
9. Communication: Slow supramolecular mode in amine and thiol derivatives of 2-ethyl-1-hexanol revealed by combined dielectric and shear-mechanical studies,
K. Adrjanowicz, B. Jakobsen, T. Hecksher, K. Kaminski, M. Dulski, M. Paluch, and **K. Niss**, *J. Chem. Phys.*, **143**, 181102 (2015).
10. A systematic study of the isothermal crystallization of the mono-alcohol n-butanol monitored by dielectric spectroscopy,
M. H. Jensen, C. Alba-Simionesco, **K. Niss**, T. Hecksher, *J. Chem Phys*, **143**, 134501 (2015).
11. Crystallization behavior and relaxation dynamics of supercooled S-ketoprofen and the racemic mixture along an isochrone,
K. Adrjanowicz, K. Kaminski, M. Paluch, and **K. Niss**, *J. Cryst. Growth & Design*, **15**, 1357 (2015).
12. Isomorph theory prediction for the dielectric loss variation along an isochrone
W. Xiao , J. Tofteskov, T. V. Christensen, J. C. Dyre, and **K. Niss**, *J. Non-Cryst. Solid* **407** 190 (2015).

13. The dynamic bulk modulus of three glass-forming liquids,
D. Gundermann, **K. Niss**, T. Christensen, J. C. Dyre and T. Hecksher *J. Chem. Phys.* **140** 244508 (2014).
14. Communication: Two measures of isochronal superposition,
L. A. Roed, D. Gundermann, J. C. Dyre, and **K. Niss** *J. Chem. Phys.* **139**, 101101 (2013).
15. Measuring the dynamic thermal expansivity of molecular liquids near the glass transition,
K. Niss, D. Gundermann, T. Christensen, and J. C. Dyre, *Phys. Rev. E* **85**, 016313 (2012).
16. Communication: Identical temperature dependence of the time scales of several linear-response functions of two glass-forming liquids,
B. Jakobsen, T. Hecksher, T. Christensen, N. B. Olsen, J. C. Dyre, and **K. Niss** *J. Chem. Phys.* **136**, 081102 (2012).
17. Predicting the density-scaling exponent of a glass-forming liquid from Prigogine-Defay ratio measurements,
D. Gundermann, U. R. Pedersen, T. Hecksher, N. P. Bailey, B. Jakobsen, T. Christensen, N. B. Olsen, T. B. Schröder, D. Fragiadakis, R. Casalini, C. M. Roland, J. C. Dyre and **K. Niss** *Nature Physics* **7**, 816–821 (2011).
18. Beta relaxation in the shear mechanics of viscous liquids: Phenomenology and network modeling of the alpha-beta merging region,
B. Jakobsen, **K. Niss**, C. Maggi, N.B. Olsen, T. Christensen, and J.C. Dyre, *J. Non-Cryst. Solids* **357**, 267–273 (2011).
19. The role of chain length in nonergodicity factor and fragility of polymers,
C. Dalle-Ferrier, **K. Niss**, A.P. Sokolov, B. Frick, J. Serrano, and C. Alba-Simionesco, *Macromol.* **43**, 8977–8984 (2010).
20. Physical aging of molecular glasses studied by a device allowing for rapid thermal equilibration,
T. Hecksher, N.B. Olsen, **K. Niss** and J. Dyre, *J. Chem. Phys.* **133**, 174514 (2010).
21. Connection between slow and fast dynamics of molecular liquids around the glass transition,
K. Niss, C. Dalle-Ferrier, B. Frick, D. Russo, J. Dyre and C. Alba-Simionesco, *Phys. Rev. E* **82**, 021508 (2010).
22. An electrical circuit model of the alpha-beta merging seen in dielectric relaxation of ultra viscous liquids,
N. Sağlanmak, A. I. Nielsen, N. B. Olsen, J. C. Dyre, and **K. Niss**, *J. Chem Phys.* **132** 024503 (2010).
23. Prevalence of approximate square-root t relaxation for the dielectric alpha process in viscous organic liquids,
A. Nielsen, T. E. Christensen, B. Jakobsen, **K. Niss**, N. B. Olsen and J. C. Dyre, *J. Chem. Phys.* **130**, 154508 (2009).
24. A brief critique of the Adam-Gibbs entropy model,
J. C. Dyre, T. Hecksher, **K. Niss**, *J. Non-Cryst. Solids* **355**, 624–627 (2009).
25. Glassy properties and viscous slowing down: An analysis of the correlation between nonergodicity factor and fragility,
K. Niss, C. Dalle-Ferrier, V. M. Giordano, G. Monaco, B. Frick, and C. Alba-Simionesco, *J. Chem Phys.* **129**, 194513 (2008).

26. Glass-forming liquids: One or more “order” parameters, N. Bailey, T. E. Christensen, B. Jakobsen, **K. Niss**, N. B. Olsen, U. R. Pedersen, T. Schrøder and J. C. Dyre, *J. Phys-Condens. Mat.* **20**, 244113 (2008).
27. Influence of pressure on the boson peak: Stronger than elastic medium transformation, **K. Niss**, B. Frick, J. Ollivier, A. Beraud, A. Sokolov, B. Begen, V. Novikov, and C. Alba-Simionesco, *Phys. Rev. Lett.* **99**, 055502 (2007).
28. On the correlation between fragility and stretching in glassforming liquids, **K. Niss**, C. Dalle-Ferrier, G. Tarjus, and C. Alba-Simionesco, *J. Phys-Condens. Mat.* **19**, 076102 (2007).
29. Streamline topology in the near-wake of a circular cylinder at low Reynolds numbers, M. Brøns, B. Jakobsen, **K. Niss**, A. Bisgaard, and L. Voigt, *J. Fluid Mech.* **584**, 23–43 (2007).
30. Effects of density and temperature on correlations between fragility and glassy properties, **K. Niss** and C. Alba-Simionesco, *Phys. Rev. B.* **74**, 024205 (2006).
31. Influence of pressure on fast dynamics in polyisobutylene, B. Begen, A. Kisluk, V. N. Novikov, A. P. Sokolov, **K. Niss**, A. Chauty-Cailliaux, C. Alba-Simionesco, B. Frick, *J. Non-Chryst. Solids* **352**, 4583–4588 (2006).
32. Dielectric and shear mechanical relaxations in glass-forming liquids: A test of the Gemant-DiMarzio-Bishop model, **K. Niss**, B. Jakobsen, and N. B. Olsen, *J. Chem. Phys.* **123**, 234510 (2005).
33. Dielectric and shear mechanical alpha and beta relaxations in seven glass-forming liquids, B. Jakobsen, **K. Niss**, and N. B. Olsen, *J. Chem. Phys.* **123**, 234511 (2005).

Submitted papers, published online on preprint server arxiv.org

34. Evidence of a one-dimensional thermodynamic phase diagram for simple glass-formers, H. W. Hansen, A. Sanz, K. Adrjanowicz, and **K. Niss**, arXiv:1709.08953 in review *Nature Communication*
35. High-pressure cell for simultaneous dielectric and neutron spectroscopy A. Sanz, H. W. Hansen, B. Jakobsen, I. H. Pedersen, S. Capaccioli, K. Adrjanowicz, M. Paluch, J. Gonthier, B. Frick, E. Lelièvre-Berna, J. Peters, and **K. Niss** arXiv:1709.09859 , submitted to Review of Scientific Instruments
36. Slow rheological mode in glycerol and glycerol-water mixtures, M. H. Jensen, C. Gainaru, C. Alba-Simionesco, T. Hecsher and **K. Niss**, arXiv:1709.08695

Keynotes and Invited Talks

1. Experimental support of the Isomorph Theory, The 8th International Discussion Meeting on Relaxations in Complex Systems, Wisla, Poland, 23.-29.7.2017
2. Dynamics of glass-forming liquids — from picosecond to kilosecond, Danish Physical Society, Annual Meeting, Nyborg, Denmark, 22.7.-23.5.2017

3. Extracting new information from dielectric spectroscopy by keeping track of geometric changes of the capacitor,
BDS 2016, 9th International Conference on Broadband Dielectric Spectroscopy and its Applications, Pisa, Italy, 11-16.9.2016
4. Is the glass transition universal?
Future of Chemical Physics, AIP Publishing Horizons conference, Oxford, UK, 31.8-2.9.2016
5. Simple Aging,
American Physical Society March Meeting, San Antonio, Texas, 2.3-6.3.2015
6. Connection between volume and relaxation-rate during aging,
7th International Discussion Meeting on Relaxations in Complex Systems, Barcelona, Spain, 21.7.-26.7.2013
7. Simple glass-forming liquids,
The Second NBIA Workshop-School on ESS Science, Copenhagen, 25.6-29.6.2012
8. Do simple liquids exist?
Danish Physical Society, Annual Meeting, Nyborg, Denmark, 19.6.-20.6.2012
9. Density and temperature,
The 6th International Discussion Meeting on Relaxations in Complex Systems, Rome, Italy, 30.08.-05.09.2009.
10. Is the viscous slowing down controlled by the elastic constants?
International Workshop on Glass and Entropy; Trencin, Slovakia. 25.06 - 27.06.2008.

Contributed Talks

1. Simple Aging,
Viscous Liquids and the Glass Transition (XIII) Holbæk, Denmark, 28.05.-30.05.2015
2. First measurements of three independent thermoviscoelastic linear-response functions in a glass-forming liquid.
The 16th International Conference on Internal Friction and Mechanical Spectroscopy Lausanne, Switzerland, 3.6.-8.6.2011
3. An experimentalists view on strongly correlating liquids,
Viscous Liquids and the Glass Transition (VIII) Holbæk, Denmark, 28.05.-30.05.2010
4. An experimentalists view on strongly correlating liquids,
XII International Workshop on Complex Systems, Andalo, Italy, 15.03.-18.03.2010
5. Experimental Methods of the "Glass and Time" Group,
Danish Glass Symposium, Aalborg University, Denmark, 19.02.2010
6. The ideal aging experiment,
Viscous Liquids and the Glass Transition VII, Holbæk, Denmark, 24.04.-26.04.2009 .
7. Fragility and its (proposed) correlation to other properties – What can we learn from high pressure experiments?,
Fragility of Viscous Liquids: Cause(s) and Consequences, Copenhagen, Denmark. 08.10 - 10.10.2008.

8. Shear relaxation in viscous molecular liquids,
Annual Meeting of the Danish Physical Society, Nyborg, Denmark, 17.06 - 18.06.2008.
9. Merging of the alpha and beta relaxations,
XI Workshop on Complex Systems, Andalo, Italy, 17.03 - 20.03.2008.
10. Pressure dependence of the boson peak in glasses,
Annual Meeting of the Danish Physical Society, Nyborg, Denmark, 01.06.-02.06.2006.
11. Density versus temperature effects on correlations between fragility and glassy properties,
Viscous Liquids and the Glass Transition V, Holbæk, Denmark, 26.05.-28.05.2006.
12. Molecular weight and glass transition in PIB,
First International Workshop on Neutron Brillouin Scattering, Perugia, Italy 12.06.-14.06.2005.
13. Mean square displacement and fragility,
Viscous Liquids and the Glass Transition IV, Holbæk, Denmark 03.06.-05.06.2005.
14. Structure and boson peak in polymers at high pressure,
Journées de la Diffusion Neutronique (JDN12), Praz-sur-Arly, France, 23.05.-26.05.2004.
15. Dielectric and shear mechanical relaxation in viscous Liquids: Are they Connected?,
Viscous Liquids and the Glass Transition IIV, Holbæk, Denmark 09.05.-11.05.2003.

Poster Contributions at Conferences

1. First measurements of three independent thermoviscoelastic linear-response functions in a glass-forming liquid,
Gordon Research Conference on Chemistry & Physics of Liquids, Holderness, USA, 24.07.-29.07.2011
2. Dynamic thermal expansivity of a molecular liquid near the glass transition,
International Workshop on Dynamics in Viscous Liquids, Rome, Italy, 30.03.-2.04.2011
3. Boson peak and fragilities,
IV Workshop on Non Equilibrium Phenomena in Supercooled Fluids, Glasses and Amorphous Materials, Pisa, Italy, 17.09.-22.09.2006
4. Pressure dependence of the boson peak in polymers and molecular liquids,
5th International Discussion Meeting on Relaxations in Complex Systems, Lille, France, 6.07.-13.07.2005
5. Can dielectric spectroscopy tell us anything about the frequency dependent shear modulus?,
BDS 2004, Broadband Dielectric Spectroscopy and its Applications, Delft, Holland, 23.08.-26.08.2004

Popular publications [Titles translated from Danish]

A microscope of time

Aktuel Naturvidenskab (2015) Popular article about neutron scattering and glass Science

Co-authored by my PhD student Henriette Wase-Hansen

[Aktuel_Naturvidenskab/nr-1/AN1-2015tidsmikroskop.pdf](#)

Blog about every day physics

Published online by Videnskab.dk 2012 –2016

<http://videnskab.dk/author/author/446>

1. The classical states of matter do not explain the world around us
<http://videnskab.dk/naturvidenskab/de-klassiske-tilstandsformer-forklarer-ikke-verden-omkring-os>
2. Technological riddles and great questions
<http://videnskab.dk/naturvidenskab/teknologisk-puslespil-og-store-gaader>
3. Should science always be useful?
<http://videnskab.dk/kultur-samfund/fysikforsker-skal-forskning-altid-kunne-bruges-til-noget>
4. Is everything relative?
<http://videnskab.dk/naturvidenskab/er-alt-relativt>
5. Lighter things fall slower
<http://videnskab.dk/naturvidenskab/lette-ting-falder-langsomt>
6. Political campaign and the use of math
<http://videnskab.dk/naturvidenskab/valgkamp-og-regnefejl>
7. Physics and parenting
<http://videnskab.dk/naturvidenskab/ammestuefysik>
8. When scientists fight
<http://videnskab.dk/naturvidenskab/nervekrig-naar-videnskaben-slaas>
9. A super-star
<http://videnskab.dk/naturvidenskab/en-superstjerne>
10. Has the temperature on Greenland doubled?
<http://videnskab.dk/naturvidenskab/er-temperaturen-paa-groenland-fordoblet>
11. Must a nerd dress poorly?
<http://videnskab.dk/kultur-samfund/skal-en-noerd-gaa-i-grimt-toej>
12. How colors catch the sun
<http://videnskab.dk/naturvidenskab/farver-fanger-solen>
13. The solar power of nature
<http://videnskab.dk/naturvidenskab/naturens-egen-solfanger>
14. Glass and medicine of the future
<http://videnskab.dk/naturvidenskab/glas-fysik-og-fremtidens-medicin>
15. How hard is bread?
<http://videnskab.dk/naturvidenskab/hvad-er-haardest-knaekbroed-eller-din-mave>
16. Keeping track of numbers
<http://videnskab.dk/naturvidenskab/at-holde-styr-paa-tal>
17. Calculating and procrastinating
<http://videnskab.dk/naturvidenskab/regnvejrs-regning-og-andre-overspringshandling>
18. When is the coldest time of year?
<http://videnskab.dk/naturvidenskab/hvornaar-er-det-moerkest-og-hvornaar-er-det-koldest>
19. Mayonnaise is not just oil and egg
<http://videnskab.dk/naturvidenskab/mayonnaise-er-ikke-bare-olie-og-aeg>
20. No one ever saw a molecule
<http://videnskab.dk/naturvidenskab/ingen-har-nogensinde-set-et-molekyle>

21. The laws of physics hold in Iran
<http://videnskab.dk/naturvidenskab/om-de-fysiske-love-i-iran>
22. Should you run or walk through the rain?
<http://videnskab.dk/naturvidenskab/kan-det-betale-sig-at-loebe-gennem-regnen>

Interviews and Portraits [In Danish]

1. Newspaper feature about isomorph theory and glass science (also featuring Prof. J. Dyre). Weekendavisen, Ideer, May 19th 2018 http://glass.ruc.dk/popular_text/weekendavisen190517.pdf
2. Movie about viscous liquids, published online by Videnskab.dk (2017)
<http://videnskab.dk/naturvidenskab/forskerens-favorit-seje-vaesker-udfordrer-vores-skolelaerdom>
3. RomerRiget om nørder. Participation in radioshow on Radio24-7 hosted by Knud Romer (2015)
www.radio24syv.dk/programmer/romerriget/12469953/romerriget-uge-47-2015/
4. Humorous interview on the question, Should you run or walk in the rain? Published online by Extra Bladet 17.11.2014 <http://ekstrabladet.dk/vejret/article5233728.ece>
5. Interview contribution in “Slip din viden løs” a book about popular science communication Published by Videnskab.dk (2013) <http://videnskab.dk/node/6215>.
6. Portrait in the annual report of The Danish Council for Independent Research (2012)
fivu.dk/publikationer/2013/filer-2013/dff-arsberetning-dk2012-web_final.pdf
7. Article about “Glass and Time” (also features Prof. J.Dyre) published in first issue of Roskilde University biannual magazine about research, Rubrik (2012) www.e-pages.dk/roskildeuniversitet/119/
8. Movie showing work in the lab, published online by Videnskab.dk (2011)
videnskab.dk/miljo-naturvidenskab/se-et-forsog-med-vaesker-i-laboratoriet
9. Interview about recent scientific results, (also features Prof. J.Dyre), published online by Videnskab.dk and national News Paper JP (2011)
videnskab.dk/miljo-naturvidenskab/forskerne-er-blevet-klogere-pa-vaesker
10. Movie, part of a series of portrait of scientists, published online by Videnskab.dk (2010)
videnskab.dk/miljo-naturvidenskab/eksperimental-fysik-undersoger-ny-fasetilstand

Popular talks [Titles translated from Danish]

1. Are liquids supercool?
Cafébiografen, Odense, 16.03.2017
2. The three states of matter and the world around us
Kulturnatten, Information, 14.10.2016
3. Do the three states of matter explain the world around us?
Royal Academy of Science open house 26.4.2016
https://www.youtube.com/watch?v=5US4OgRC_aQ (first half by Prof. Dyre)
4. Do simple liquids exist?
Folkeuniversitet, Empdrup (30.10.2014) and Århus (13.11.2014)

5. When is a cow spherical?
RUC official annual meeting (20.11.2013)
<http://www.youtube.com/watch?v=Lf47E5ZSLDc>
6. What do we measure with our senses?
Talk for visiting high school students given approx 10 times to a total of 300 students in the period 2010-2015
7. The *4th* state of matter
Talk for visiting high school students given approx 4 times to a total of 100 students in the period 2007-2008