



Professor Nigel Wilding
BSc (Edin.), PhD(Edin.)

Professor and Head of School of Physics

Head of School

Area of research

Statistical mechanics of soft matter

Office 3.22
HH Wills Physics Laboratory,
Tyndall Avenue, Bristol BS8 1TL
([See a map](#))

+44 (0) 117 928 8761
nigel.wilding@bristol.ac.uk

Summary

Much of my research involves applying state-of-the-art Monte Carlo simulation methods to explore the fascinating physics that occurs in complex colloids, such as self assembly and unusual phase behaviour. A focus is the development and application of novel simulation algorithms that allow phenomena to be revealed that are inaccessible to conventional techniques. An appealing aspects of colloidal physics is that simple models often correspond quite closely to real systems, and this allows us to collaborate meaningfully with experimentalists. Beyond colloids I am interested in computational and theoretical solutions to a wide range of problems in soft matter and statistical physics. For more information, see my [personal pages](#).

Biography

After graduating in Physics (first class honours) from Edinburgh University in 1988, I stayed in Edinburgh to do a PhD on the topic "Structural patterns at phase transitions" which I completed in early 1992. I then spent a year as a postdoc in the Institute of Theoretical Physics, University of Heidelberg before moving to the Institute of Physics at Mainz University, where I worked with K. Binder for 3 years as a postdoc. In 1996 I returned to the Physics Department at Edinburgh University to take up a Personal Research Fellowship from the Royal Society of Edinburgh. In 1999 I became a temporary lecturer at Edinburgh University before moving in 2000, to take up a permanent lectureship in the Department of Mathematical Sciences at Liverpool University. In 2002 I was appointed to a lectureship in the Department of Physics at the University of Bath, becoming a [Reader](#) in 2004 and a Professor in 2009. In 2018 I moved to the School of Physics, University of Bristol as Professor and Head of School.

Keywords

- Hydrophobicity
- Colloidal self assembly
- Statistical mechanics of soft matter

Memberships

Organisations

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Research groups

- [Theory Group](#)
- [Biological, Soft and Complex Matter](#)

Links

-  [Personal Research pages](#)

Recent publications

- Kobayashi, H, Rohrbach, PB, Scheichl, R, Wilding, NB & Jack, RL, 2019, '[Correction of coarse-graining errors by a two-level method: application to the Asakura-Oosawa model](#)'. *Journal of Chemical Physics*.
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- Russo, J & Wilding, NB, 2017, '[Disappearance of the hexatic phase in a binary mixture of hard disks](#)'. *Physical Review Letters*, vol 119.
- Evans, R, Stewart, MC & Wilding, NB, 2017, '[Drying and wetting transitions of a Lennard-Jones fluid: Simulations and density functional theory](#)'. *Journal of Chemical Physics*, vol 147.
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- Evans, R, Stewart, MC & Wilding, NB, 2016, '[Critical Drying of Liquids](#)'. *Physical Review Letters*, vol 117.
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