

## Mark Leake

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**Tuesday, 16<sup>th</sup> April 2019, 16:00 s.t.**

TU Wien, Institut für Angewandte Physik, E134  
1040 Wien, Wiedner Hauptstraße 8-10  
Yellow Tower „B“, 5<sup>th</sup> floor, SEM.R. DB gelb 05 B



### Getting under the hood: unpicking DNA-Protein interactions one molecule at a time

Many of the interactions of proteins with DNA have a significant influence on its subsequent role inside living cells, such as DNA replication, transcription and gene regulation. I will discuss some of our insights in this area, stemming from a suite of highly interdisciplinary tools *in vitro*, *in silico* and *in vivo*, that could, perhaps, be thought of as emerging from the growing toolkit of ‘next generation biophysics’. This powerful combinatorial approach has enabled us to really get under the hood and explore the machinery associated DNA-protein interactions at a level of single, functional molecules.

**Mark Leake** is a physicist by training but now addresses challenging biophysical and biochemical questions in a range of biological processes. General themes of his research involve (i) developing new biophysical instrumentation for addressing open biological questions, and (ii) applying these coupled to molecular biology and biochemical approaches to investigating questions concerning single molecules under physiologically relevant environments. His work on molecular manipulation, ultrasensitive imaging and bespoke biophysical instrumentation has led to >100 articles with several thousand cumulative citations. He is an elected Fellow of the Institute of Physics (UK), Royal Microscopical Society, and Royal Society of Biology, and is the Coordinator of the Physics of Life Group of *ca.* 10 research teams at the University of York (<https://www.york.ac.uk/physics/research/physics-of-life/>), following several years as a group leader and visiting professor at Oxford University, as well as heading his own interdisciplinary research team specializing in single-molecule biophysics. He is sole-author of textbooks *Single-molecule cellular biophysics* CUP, *Biophysics: Tools & Techniques* CRC Press.

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion).

Friedrich Aumayr  
(LVA-Leiter)

Gerhard Schütz  
(Seminar Chair)