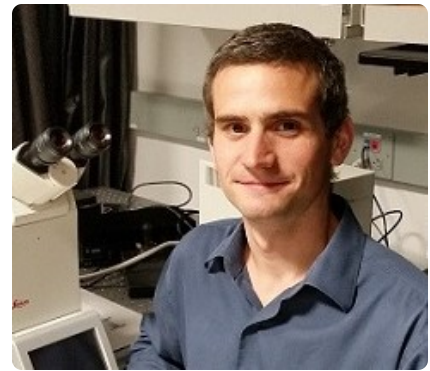


Alfred Millett-Sikking

Research & Development Engineer

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About

I'm a hybrid physicist and engineer who is fascinated by the notion of optimal designs. I've spent my career assembling experience in applied physics, optics, mechanics, electronics, programming and microscopy. I seek to improve technologies, and invent new ones, with element and system level innovations.

Key Skills

- R&D Engineering
- Design, Build & Test
- Optics ([Zemax](#))
- Mechanics ([Solidworks](#))
- Programming ([Python](#))
- Microscope design

Experience

[Calico Life Sciences LLC](#)

2021 - 2024: **Senior Engineer**

I invented a novel technique to image 3D samples of any refractive index at high resolution using an immersion objective of any type^{[[Millett-Sikking 2023](#)]}. This new 'any immersion remote refocus' (AIRR) microscopy method is particularly powerful when using a high numerical aperture air objective to image into 3D biological samples^{[[Millett-Sikking 2022](#)]}. I then applied the AIRR technology to design and build a state of the art, large field of view, single-objective light-sheet ([SOLS](#)) [microscope at Calico](#), including real-time multi-angle projections^{[[Chang 2021](#)]}. I also built a fast and flexible [widefield microscope](#) and continued to collaborate with SOLS builders ([Snoutclub](#)) on many projects^{[[Sommernes 2024](#), [Bodén 2024](#)]}.

2020 - 2021: **Scientist II**

The main drive of this period was to produce a user level [SOLS](#) microscope for Calico. In practice this meant developing [device adaptors](#), [instrument control](#) and [data processing](#) software, and well as build and alignment procedures to get good [PSF data](#). This naturally led to training users and early biological applications ^{[[Okreglak 2023](#)]}.

2018 - 2020: **Scientist**

Initially I developed a series of custom [ASI](#) microscopes for 'The Yeast Lifespan' project at Calico [\[Thayer 2022\]](#). This was followed by a major breakthrough when I designed a new kind of objective lens, the '[AMS-AGY](#)' objective (a.k.a 'Snouty'), that revolutionized light-sheet microscopy [\[Millett-Sikking 2019, Riolka 2019, Millett-Sikking 2020\]](#). The new "single-objective light-sheet" (SOLS) architecture is inherently fast, gentle, 3D and compatible with standard samples, making it a versatile and valuable technology [\[Sapoznik 2020, Millett-Sikking 2020\]](#). This platform was then extended to larger fields of view [\[Yang 2022, Chen 2022\]](#).

2015 - 2018: **Senior Research Associate**

As a founding member of the [York lab](#), I developed the original microscopy core and technology labs at Calico. In particular I designed and built a novel fast focusing module for a [Leica](#) microscope using [Nikon](#) remote refocus (RR) optics [\[Millett-Sikking 2018\]](#).

[VisiTech International Ltd](#)

2013 - 2015: **Research & Development Engineer**

Lead engineer in the development of multipoint laser scanning confocal microscopes ([VT-Infinity](#)). Including the full opto-mechanical design of a new super-resolution imaging system [\[York 2013\]](#) that was taken from concept stage to final product ([VT-iSIM](#)).

[Department of Physics, Durham University](#)

2011 - 2012: **Postgraduate Research Associate**

The first year of a PhD with the Quantum Light and Matter ([QLM](#)) group. I built and tested various intricate optical systems and completed the postgraduate courses.

Education

[Durham University](#)

2002 - 2006: **MSci Physics**

1st Class Honours and D. A. Wright Prize for best research project [\[Millett-Sikking 2006\]](#). (Physics, Maths, Theoretical Physics, Experimental Physics, Mathematical Methods, Condensed Matter Physics, Astronomy, Electronics, Atomic & Optical Physics)

Other

Keen climber, hiker, camper, cyclist and general outdoor enthusiast. Fluent in Spanish.
