

A portrait of Chiara Lindner, a young woman with brown hair pulled back, smiling warmly. She is wearing a grey blazer over a white t-shirt. The background is a blurred laboratory or office setting with shelves and equipment.

Chiara Lindner started her PhD at Fraunhofer IPM in 2018 in the field of quantum sensing.

CHIARA LINDNER has been conducting research on quantum sensing as part of her PhD at Fraunhofer IPM since 2018. Her work focuses on the question of how entangled photon pairs can be used for infrared spectroscopy.

THREE QUESTIONS FOR ... CHIARA LINDNER

Ms. Lindner, what is so fascinating about quantum sensor technology?

My background is in applied physics, and optics has always been my subject. This has now developed into quantum sensor technology, which is a cutting-edge and ambitious topic at the moment. This new field of research builds on the fundamental principles of photonics. Even though quantum sensing still is a rather young topic at the institute, we have managed to contribute to the state of the art rather quickly.

The advantage of our approach is that we can achieve remarkably good spectroscopic results with extremely small amounts of light. This opens up many exciting fields of application. Biological samples, for example, sometimes react very sensitively to light.

Last year, you achieved a breakthrough in the project: You developed a quantum spectrometer.

How does that feel?

It didn't come entirely unexpected, of course; it is something you work towards. It's a bit like knitting a scarf. You put in stitch after stitch, and at some point, you stop and realize: you've already knitted two meters. In everyday life, you don't always take the time to review your own research

progress. So when you prepare a conference presentation and look at the whole thing from the outside, you realize how far you've already come. That's a great feeling.

What have been the biggest challenges you have faced during your PhD so far? What were the highlights?

A PhD thesis in itself is, of course, a challenge. For many people, just like for me, it's the start of their career. You have to work more independently than you did during your studies. But that is also one of the most sustainable and valuable skills that you take away from it.

One highlight was certainly my participation at the "Photonics West" conference in San Francisco, shortly before the start of the pandemic. It is truly exciting to be able to present your own research results at such a huge international conference. Also, at the beginning of 2021, my second paper was accepted and was directly chosen as an Editor's Pick. I was very honored by this; I had not expected this at all.