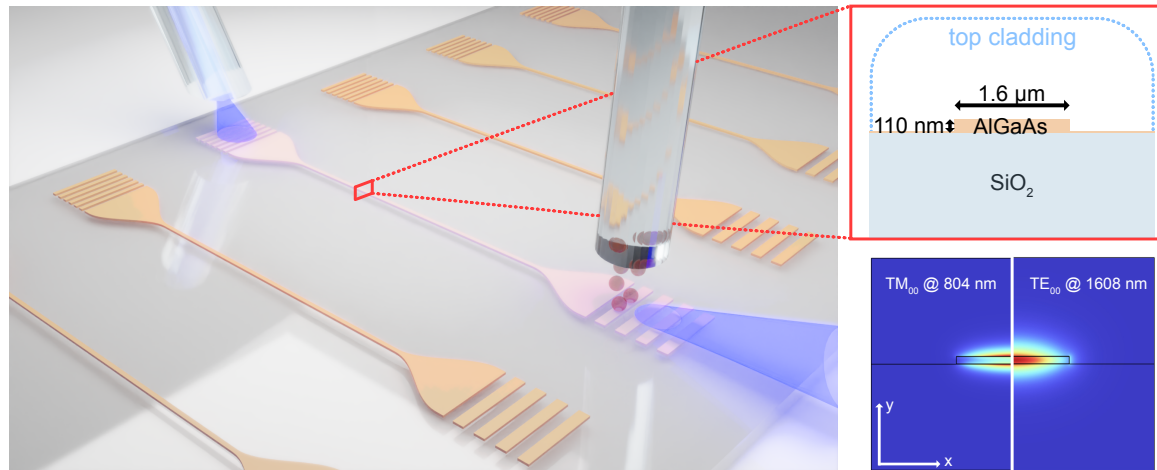


**B.Sc. / M. Sc. thesis project:
Integrated quantum photonics workstations for QKD applications**

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The goal of this project is to adapt our existing integrated photonics workstation for remote wafer-level testing capability and to optimize its coupling stability using closed-cycle piezo fiber stages. Once high performance remote operation is achieved, the waveguide sources shall be employed for entangled photon quantum key distribution schemes.

Utilizing the unparalleled optical nonlinearities of Aluminum Gallium Arsenide, we built waveguide sources for ultra-bright quantum light generation. These waveguides can generate billions of entangled photon pairs from a laserpointer-level pump laser [1]. For ideal performance, however, fabrication quality monitoring and optimal coupling stability are crucial.



[1] PLACKE, Marlon ; SCHLEGEL, Jan ; MANN, Felix ; CASA, Pietro D. ; THIES, Andreas ; WEYERS, Markus ; TRÄNKLE, Günther ; RAMELOW, Sven: Telecom-Band SPDC in AlGaAs-on-Insulator Waveguides. In: *arXiv quant-ph* (2023), S. 2312.07300