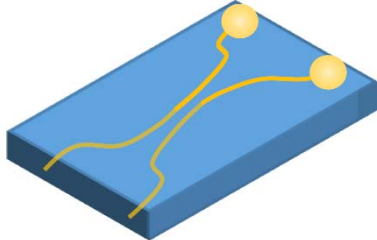


Integrated single photon sources for on-chip quantum information processing 18GS		Start Date: PhD candidate starts on 01.11.2017
PhD: Konstantin Fehler (Ulm)	PIs: Prof. S. Barz (Stuttgart) Prof. A. Kubanek (Ulm)	
 <p>Abstract: In our project we aim at combining new sources for single, indistinguishable photons with integrated photonic devices. Goal of our project is to establish a scalable architecture for interfacing many quantum emitters via integrated photonic waveguides. With such a prototype, applications in QIP and Quantum Sensing, such as boson sampling or integrated quantum networks, will come into reach. The project is divided into two main directions. At Ulm University, new single photon sources will be investigated with main focus being the integrateability of the emitters into photonic chips, e.g. via evanescent field coupling. One candidate is the SiV- center in nanodiamond (ND), which allows efficient evanescent coupling if the diamond host matrix is sufficiently small. Throughout the project different emitters with large range of emission wavelengths will be investigated. In particular, we will improve optical and coherence properties of quantum emitters close to the diamond surface. Issues arising from the proximity to host surface will be tackled by combining approaches from physics, chemistry and engineering such as, for example, surface chemistry, diamond growth with deterministic emitter positioning and doping, or diamond nanostructuring - making this project an interdisciplinary research effort.</p>		
Recent results:	Publications:	
<ul style="list-style-type: none"> • <i>SiV- center in NDs with excellent optical properties in low strain NDs observed</i> 	<ul style="list-style-type: none"> • In preparation: Silicon-vacancy quantum emitters in low strain NDs with atom-like optical properties • Nanodiamonds carrying silicon-vacancy quantum emitters with almost lifetime-limited linewidths, Uwe Jantzen et al., , New Journal of Physics, 18 (2016) 073036 	
Further Collaborators: Valery A. Davydov, Viatcheslav N. Agafonov		