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## Cavity quantum electrodynamics with rare-earth ions in solids

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# List of publications

1. “Spin squeezed states in a two-dimensional system”, Feng Peng and **Ding Dapeng**, *Physica B* 353, 116–120 (2004).
2. “Lithographic mechanical break junctions for single-molecule measurements in vacuum: possibilities and limitations”, Christian A Martin, **Dapeng Ding**, Herre S J van der Zant, and Jan M van Ruitenbeek, *New Journal of Physics* 10, 065008 (2008).
3. “Fullerene-based anchoring groups for molecular electronics”, Christian A. Martin, **Dapeng Ding**, Jakob Kryger Sørensen, Thomas Bjørnholm, Jan M. van Ruitenbeek, and Herre S. J. van der Zant, *Journal of the American Chemical Society* 130, 13198–13199 (2008).
4. “Tuning micropillar cavity birefringence by laser induced surface defects”, Cristian Bonato, **Dapeng Ding**, Jan Gudat, Susanna Thon, Hyochul Kim, Pierre M. Petroff, Martin P. van Exter, and Dirk Bouwmeester, *Applied Physics Letters* 95, 251104 (2009).
5. “Fiber-connectorized micropillar cavities”, Florian Haupt, Sumant S. R. Oemrawsingh, Susanna M. Thon, Hyochul Kim, Dustin Kleckner, **Dapeng Ding**, Donald J. Suntrup III, Pierre M. Petroff, and Dirk Bouwmeester, *Applied Physics Letters* 97, 131113 (2010) (Chapter 3).
6. “CNOT and Bell-state analysis in the weak-coupling cavity QED regime”, Cristian Bonato, Florian Haupt, Sumant S. R. Oemrawsingh, Jan Gudat, **Dapeng Ding**, Martin P. van Exter, and Dirk Bouwmeester, *Physical Review Letters* 104, 160503 (2010).
7. “Fano resonances in a multimode waveguide coupled to a high-Q silicon nitride ring resonator”, **Dapeng Ding**, Michiel J. A. de Dood, Jared F. Bauters, Martijn J. R. Heck, John E. Bowers, and Dirk Bouwmeester, *Optics Express* 22, 6778–6790 (2014) (Chapter 2).



# Curriculum vitae

**Personal information:** male, born on October 23rd, 1981 in Anshan, China.

**Educational background:**

Department of Applied Physics, University of Science and Technology Beijing, China (Sep. 2000–Jul. 2004).

Department of Microtechnology and Nanoscience, Chalmers University of Technology, Sweden (Sep. 2006–May 2007).

Institute of Physics, Leiden University and Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands (Sep. 2007–Oct. 2008).

Institute of Physics, Leiden University, The Netherlands (Jan. 2009–Present).

**Academic degrees:**

Bachelor of Science in Physics at the University of Science and Technology Beijing (2004). Thesis title: “Study on spin fluctuation in x-y model” (supervisor: Professor Feng Peng).

Master of Science in Nanoscience at Leiden University (2008). Thesis title: “Measurements of fullerene-anchored molecules” (supervisor: Professor Jan M. van Ruitenbeek).

PhD candidate at Leiden University (supervisor: Professor Dirk Bouwmeester).



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Ms. Daniëlle Verhoeff in the early days and afterwards Ms. Henriëtte van Leeuwen as secretaries in the group assisted me with all the management and administrative affairs. Their kindness and dedication made these affairs much easier for me so that I could fully concentrate on my research. I would like to express my sincere gratitude to them.

When I joined the group in 2009, my first research project was to study self-assembled quantum dots in micropillar cavities together with a senior PhD student, Jan Gudat. I gained a lot of knowledge from Jan, especially practical skills on optics, cryogenics, vacuum, and electronics, which turned out to be

very useful for my new project described in this thesis. Petro Sonin and Evan Jeffrey who worked on the optomechanics project joined the group also earlier than me. The state-of-the-art techniques required by their ultra-sensitive experiments such as laser frequency stabilization, ultra-low temperatures, vibration isolation, and low-noise measurements strongly influenced my perspective of experimental design. Some of the techniques were implemented in my project. The period with Jan, Petro (particularly at night), and Evan was my happiest time in the group.

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