



# PhD Scholarship - Nanoscience

## *DNA-Directed Nanofabrication*

### Melbourne - Australia

**The project:** DNA-Directed Nanofabrication

*Our team at Monash University is developing new nanofabrication concepts in collaboration with the Molecular Foundry based at the Lawrence Berkeley National Laboratories.*

*Current micro and nanofabrication methods (e.g. silicon chip production) are based on top-down approaches using photolithographic methods. Alternatively devices can be assembled through bottom-up approaches using nanoscale building blocks of metals, semiconductors and insulators. Our group aims to develop methods that rely on molecular self-recognition to direct the assembly of nanoparticle building blocks into desired nanostructures. Short synthetic strands of DNA selectively bind to their complementary counterparts through Watson-Crick base-pairing. We will use this highly selective recognition behaviour to direct the assembly of particles to larger functional structures with unique optical, electrical and mechanical properties (plasmonics, solar cells).*

**About us:**

*The project described above is hosted by the Australian Centre of Excellence for Electromaterials Science (ACES, [www.electromaterials.edu.au](http://www.electromaterials.edu.au)) based at Monash University ([www.monash.edu.au](http://www.monash.edu.au)).*

*Monash University is Australia's largest university with over 55,000 students on 8 campuses. It was ranked number 33 by the 'Times Higher Education Supplement' in its annual ranking of the world's top 200 universities in 2005. Monash has the leading School of Chemistry in Australia. Our Clayton campus is located in immediate proximity to Australia's first synchrotron and the Melbourne Centre for Nanofabrication that will open its doors in 2009.*

**Melbourne:**

*Melbourne, with a population of more than three million, is Australia's second largest city. It is a true multicultural city with more than one quarter of Melbourne's inhabitants born overseas.*

**Your Profile:**

*We are looking for a highly self-motivated individual, eager to widen his/her scientific horizon across the traditional borders of chemistry, physics and biology. It would be somewhat beneficial if the applicant had some experience in the areas of surface probe microscopy, surface chemistry, nanolithography or electron microscopy.*

**PhD program:**

*The doctoral degree at Monash University is a 'research only' degree with a 3 year duration.*

**Applications:**

*To enrol in a doctoral course at Monash University you require (1a) a MSc degree in a relevant discipline with first class honours or equivalent - or (1b) a BSc degree in a relevant discipline with first class honours and proof of research experience and/or scientific publication(s) and (2) a proof of English language proficiency according to Monash guidelines. (<http://mrqs.monash.edu.au/scholarships/selection/proc11.html>).*

*We advise that we can only consider candidates that comply with our university selection rules stated above. **Interested candidates are encouraged to provide us with:***

- (1) brief statement of research interests*
- (2) curriculum vitae,*
- (3) e-copies of relevant BSc and/or MSc diplomas*
- (4) proof of English language proficiency (if applicable)*
- (5) list of publications (if applicable).*

*Applications can be sent to Dr. Udo Bach:*

*[udo.bach@sci.monash.edu.au](mailto:udo.bach@sci.monash.edu.au)*

**Web page :**

*<http://www.chem.monash.edu.au/staff/bach/>*

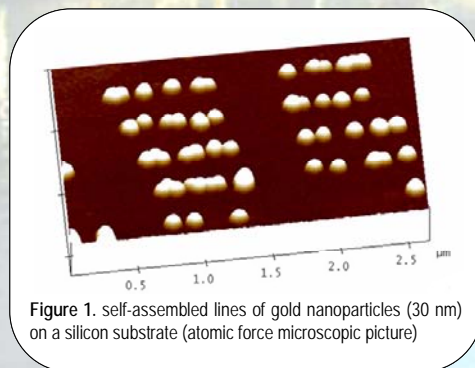


Figure 1. self-assembled lines of gold nanoparticles (30 nm) on a silicon substrate (atomic force microscopic picture)



ARC Center of Excellence for  
Electromaterials  
Science



MONASH University



Australian Government  
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