

Curriculum Vitae 14.12.2011

Thomas Olof Sebastian Sandberg

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Born 28.3.1978 in Turku

Married 2006, children 2007 and 2009



EDUCATION

Åbo Akademi University, Turku, Finland

Ph.L. in Quantum Chemistry

2009

Thesis: "Computational chemistry studies on lignans"

Major: Quantum Chemistry and Molecular Spectroscopy

Minor: Mathematics and University Education

M.Sc. in Chemistry

2005

Thesis: "Quantum chemical calculations on acidity and basicity of some toluene derivatives"

Major: Chemistry (A)

Minor: Mathematics (A), Physics (A) and Education

B.Sc. in Chemistry

2001

Thesis: "A study in symmetry groups"

Katedralskolan i Åbo, Turku, Finland

Matriculation exam

1997

RESEARCH FIELD

Quantum chemistry – structural optimizations

Molecular dynamics – simulations on lignans

TEACHING EXPERIENCE

Åbo Akademi University, Turku, Finland

Teaching Assistant in Physical Chemistry (2–3 months/year)

2006–Present

Prepared chemicals, apparatus and teaching material (70 pp), instructed in lab work and report writing, and administered all grades (2011).

Co-supervised B.Sc. Thesis (2008).

Constructed and administered three virtual courses in Physical Chemistry at the course platform Moodle.

Non-permanent Teacher in Molecular Modelling

2006–2010

Instructed in computer exercises (171 h) and lectured (12 h, 2010).

Non-permanent Teacher for pre-university students ("abiturienter")

2006–2009

Instructed in computer exercises.

Non-permanent Teacher in Propaedeutic (Preparatory) Chemistry (282 h)

2001–2005

Developed overall course structure and teaching material (65 pp) and administered all grades.

Private Teacher in Chemistry and Mathematics (high school level)

2001–2005

Högstadiet (senior-level compulsory) Sankt Olofsskolan i Åbo, Turku, Finland

Supply Teacher in Mathematics, Physics, Chemistry and Computer Science

2000–2004

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PROFESSIONAL EXPERIENCE

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|---|------------------------|
| <i>Graduate School of Computational Chemistry and Molecular Spectroscopy (LASKEMO), Finland</i> PhD student (9 months/year) | 09.2006–2010 |
| <i>Åbo Akademi University, Turku, Finland</i> PhD student in Physical Chemistry (part time, 1/3) | 04.2011–Present |
| Research Assistant in Physical Chemistry (4 months) | 2005 |
| Research Assistant in Physics (4 months) | 1998–2000 |
| <i>Resource Center for Mathematics, Science and Technology at School, Finland</i> Research Contact | 2008–Present |
| <i>Patenttitoimisto Kari Pirhonen OY</i> Translator of patent applications, mainly Finnish–Swedish | 1997–2005 |

PERSONAL SCIENTIFIC GRANTS

| | |
|---|-------------|
| Ellida och Tor Magnus Ljungbergs stipendiefond | 2011 |
| Berndt Olof Grönbloms fond | 2011 |
| Victoriastiftelsen (9 months) | 2011 |
| Magnus Ehrnrooths stiftelse (1 month) | 2006 |
| Stiftelsens för Åbo Akademi forskningsinstitut (5 months) | 2006 |

PUBLICATIONS

- Thomas Sandberg, Patrik Eklund, Matti Hotokka
Conformational analysis of LIGNOLS in aqueous solution with molecular dynamics
Submitted to Journal of Chemical Information and Modeling **2011**.
- Yury Brusentsev, Thomas Sandberg, Matti Hotokka, Rainer Sjöholm, Patrik Eklund
Synthesis, structural analysis & induction of enantioselectivity of sterically hindered chiral 1,4-diol ligands from the lignan (-)-Conidendrin. A combined experimental and quantum chemical study
Submitted to Organic & Biomolecular Chemistry **2011**.
- Thomas Sandberg, Yury Brusentsev, Patrik Eklund and Matti Hotokka
Structural analysis of sterically hindered 1,4-diols from the naturally occurring lignan hydroxymatairesinol. A quantum chemical study
International Journal of Quantum Chemistry, **2011**, *111*, 4309–4317.
- Thomas Sandberg, Matti Hotokka,
Conformational analysis of hydroxymatairesinol in aqueous solution with molecular dynamics
Journal of Computational Chemistry, **2009**, *30*, 2666–2673 (+ cover page!).
- Thomas Sandberg, Jessica Rosenholm, Matti Hotokka
The molecular structure of disulfiram and its complexation with silica. A quantum chemical study
Journal of Molecular Structure (THEOCHEM), **2008**, *861*, 57–61.
- Heidi Markus, Arie J. Plomp, Thomas Sandberg, Ville Nieminen, Johannes H. Bitter, Dmitry Yu. Murzin
Dehydrogenation of Hydroxymatairesinol to Oxomatairesinol over Carbon Nanofibre-Supported Palladium Catalysts
Journal of Molecular Catalysis A, **2007**, *274*, 42–49.
- Björn Granqvist, Thomas Sandberg, Matti Hotokka
Adsorption of organic probes on silica through Lewis interactions: A comparison of experimental results and quantum chemical calculations
Journal of Colloid and Interface Science, **2007**, *310*, 369–376.

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POSTER ABSTRACTS

Thomas Sandberg, Yury Brusentsev, Patrik Eklund and Matti Hotokka
Structural analysis of sterically hindered 1,4-diols from the naturally occurring lignan HMR
In *FunMat Annual Symposium 24.8.2011*. 1 p. **(2011)**,
In *Winter School in Theoretical Chemistry 2011, Helsingfors, Finland 12–15.12.2011*. 1 p.

Thomas Sandberg, Matti Hotokka,
Conformational analysis of hydroxymatairesinol in aqueous solution with molecular dynamics
In *13th ICQC International Congress of Quantum Chemistry, Helsinki, Finland, 22-27.6.2009*. 1 p.,
In *FunMat Seminar 3.3.2009*. 1 p., In *Nanoscience Days 2009, Jyväskylä*. 1 p. **(2009)**.

Björn Granqvist, Thomas Sandberg, Matti Hotokka
Adsorption of organic probes on silica through Lewis interactions.
A comparison of experimental results and quantum chemical calculations
In *Graduate School of Materials Research Seminar 23.5.2006*. 1 p. **(2006)**.

CONFERENCES AND COURSES

- "Winter Schools in Theoretical Chemistry" in Helsinki
- 27th "Excited State Properties" 12–13/14–15.12.**2011**
 - 26th "Accurate Molecular Structure" 13–14/15–16.12.**2010**
 - 25th "Chemical Bonding" 14/15–17.12.**2009**
 - 24th "Reactions on Surfaces" 10–12.12.**2008**
 - 23rd "Actinide Chemistry" 10–14.12.**2007**
 - 22nd "Astrochemistry" 11–14.12.**2006**
 - 21th "Nanophotonics" 7–9.12.**2005**
- "Center of Excellence for Functional Materials Annual Symposium" in Turku
- "Materials for the future" 24–25.8.**2011**
- "DEISA PRACE Symposium" in Helsinki 13–14.4.**2011**
- "Nanoscience Days 2009" in Jyväskylä 29–30.10.**2009**
- "The LasKeMo Days 2009" in Strandbo, Nauvo 12–13.10.**2009**
- "The 13th International Congress of Quantum Chemistry" in Helsinki
- "Science at the Summer Solstice" 22–27.6.**2009**
- "Joint COMP-Laskemo/CMS symposium" in Otaniemi
- "van der Waals interactions" 24.4.**2008**
- "The 17th Jyväskylä Summer School"
- "Computational Nanoscience 13–24.8.**2007**
- "Joint Graduate School Seminar" at Hanasaari, Espoo
- "Phys. and Chem. of Materials: Towards Nano" 8–9.12.**2006**
- Courses at CSC, the IT Center for Science in Espoo
- "Elmer Intensive Course" 7.9.**2011**
 - "Computational Resources BoF" 28.3.**2011**
 - "Fortran 95" 8–9.10.**2008**
 - "Sybyl Training Course" 26–27.2.**2008**
 - "CPMD, Car-Parinello Molecular Dynamics" 24–25.10.**2006**
 - "Turbomole, basics and advanced" 28–29.9.**2006**
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COMPUTER SKILLS

Windows: Office
Linux: KDE, Gnome
Xfig (grafics program)
Gnuplot (data plotting)
GAMESS (quantum chemistry)
Turbomole (quantum chemistry)
Gromacs (molecular dynamics)
Programming: C and Fortran 77 and 90/95
LaTeX (programming language for typesetting of text)
HTML programming (my homepage: <http://web.abo.fi/~tsandber>)

LANGUAGES

Swedish – native language
Finnish and English – speak fluently and read/write with high proficiency
German – speak, read, and write with basic competence.

MEMBERSHIPS

Åbo Akademi University, Turku, Finland
Department Council of Natural Sciences **2010–Present**

OFF-DUTY ACTIVITIES

Athletics, sprint; 200 m: 22.82, 400 m: 50.44, 800 m: 1.58.21
▪ Deputy member of the committee of Friidrottsföreningen ÅIFK **1997–1999**
▪ Member of the committee of Friidrottsföreningen ÅIFK **1999–2006**

REFERENCE PERSONS

| | |
|--|---|
| Dean, Prof. Matti Hotokka Porthansgatan 3 20500 Turku +358 (0)40 518 1952 | Prof. Toomas Tamm Ehitajate tee 5 19086 Tallinn, Estland +372-620 2002 |
| Prof. Dage Sundholm PB 55 (A. I. Virtasen aukio 1) 00014 University of Helsinki +358-(0)9-191 50176 | Doc. Patrik Eklund Biskopsgatan 8 20500 Turku +358-(0)2-215 4720 |