Curriculum vitae, March 2025

Biographical data

Name:	Bengt Örjan Hansson
Birthdate and -place:	1955-02-25, Gothenburg, Sweden
Academic web page:	https://www.gu.se/om-universitetet/hitta-person/orjanhansson

Undergraduate degree

MSc in Engineering Physics, Chalmers University of Technology, Gothenburg, 1983

Doctoral degree

PhD in Physics, Chalmers University of Technology, Gothenburg, 1986: *The role of manganese in the photosynthetic production of oxygen from water*. Supervisors, professors Tore Vänngård and Lars-Erik Andréasson.

Postdoc

NFR Post-Doc Fellowship, CEA Saclay, France, 1986-10-01 – 1987-12-31

Docent

Senior Lecturer in Molecular Biophysics, University of Gothenburg (GU), 1991-05-28

Previous academic positions

- Teaching assistant (amanuens) (50%), 1980-10-01 – 1983-06-30
- Assistant researcher (forskningsassistent) (80%), 1983-07-01 – 1986-09-30
- Assistant professor (forskarassistent), 1988-01-01 – 1992-10-31
- Associate professor (universitetslektor), 1992-11-01 – 1997-12-31

The above positions were at the Department of Biochemistry and Biophysics, University of Gothenburg & Chalmers University of Technology.

- Associate professor (universitetslektor), Department of Chemistry & Molecular Biology, GU, 1998-01-01 – 2024-12-31

Participation in pedagogic courses at GU

- Tal, röst och rörelse i undervisning, 3 days, 2002
- Högskolepedagogisk introduktionskurs för lärare, 1 week, 2004
- HPE201-II Handledning i forskarutbildning II, 5 hp, 2014 (unfinished)

Present academic status

Since 2025-01-01, I am fully retired but with a contract that allows me to continue my research within the premises of the Department of Chemistry & Molecular Biology, GU, without a salary. Presently, I am entitled *Senior Lecturer Emeritus in Molecular Biophysics*.

Present research project

As evident from my previous research described below, I have mostly been engaged in experimental studies, for example Electron Paramagnetic Resonance (EPR) spectroscopy and time-resolved laser spectroscopy. The experimental EPR studies at our department have now been terminated because of my retirement. But since a couple of years back, I have become interested in theoretical investigations of paramagnetic molecules (with unpaired electrons). For this, I use Density Functional Theory (DFT) to calculate EPR properties of radicals and transition-metal complexes involved in photosynthesis and cell respiration.

Previous major research projects (terminated)

- Electron-transfer reactions in photosynthesis, in particular regulation of plastocyanin. This project was supported from NFR/VR during 1988 – 2007. After that, the department financed the PhD student Daniel Farkas until 2011. EPR spectroscopy was an important research tool. In addition, tools such as NMR, time-resolved laser spectroscopy, UV/Visual absorption and fluorescence spectroscopy, stopped flow, redox titration, protein purification and site-directed mutagenesis were also important in the project.
- EPR and NMR studies of Cu binding to wild-type and mutants of the human protein angiogenin (with Profs Diego La Mendola, Pisa and Cristina Satriano, Catania, during 2009 – 2022). Between 2017 – 2019 I hosted and supervised 1-2 Master or PhD students per year for 3 months traineeship within an Erasmus+ agreement with University of Catania (Italy). This was an important part of the angiogenin project.
- EPR studies of artificial photosynthesis, in particular photosensitized water oxidation with Mn catalysts (with Prof Björn Åkermark, Stockholm, during 2010 – 2011)

Previous minor research projects (terminated)

Several minor studies have been conducted using EPR, for example of the plant photoreceptor UVR8 (with Postdoc Daniel Farkas and Prof Åke Strid, Örebro), of Cu binding to zeolites used in exhaust emission control (Prof Louise Olsson, Chalmers) and of Cu binding to the protein CopC - a putative polysaccharide monooxygenase (Prof Pernilla Wittung, Chalmers).

From the above research projects (both major and minor) it is evident that our EPR facility and my knowledge of the technique played an important role in Swedish biophysics research.

In addition, I have done research in educational science, in particular how science centers can be used in the education of science teachers (with PhD student Alexina Thorén Williams).

Publications

See the accompanying *List of publications*.

Metrics from *Web of Science* as of October 2024 (see http://researcherid.com/rid/D-1282-2009): Number of papers, 86; citations, 2497; h-index, 32

Conferences

- Oral conference presentations on 15 occasions.
- Contributing to the organization of conferences on 11 occasions.

Principal supervisor of doctoral students

- Kalle Sigfridsson, 1991-1997 (Dissertation, January 31, 1997)
- Simon Young, 1991-1997 (Dissertation, April 18, 1997)
- Mikael Ejdebäck, 1993-1999 (Dissertation, May 21, 1999)
- Kenneth Olesen, 1996-2002 (Dissertation, May 8, 2002)
- Mats Ökvist, 1998-2004 (Dissertation, May 28, 2004).
- Hanna Jansson, 1999-2007 (Dissertation, October 26, 2007).
- Daniel Farkas, 2005-2011 (Dissertation, May 31, 2011).
- Alexina Thorén Williams (CUL), 2015-2021 (Dissertation, May 19, 2021)

Co-supervisor of doctoral students

- Bruno Källebring, 1988-90 (Dissertation, June 1, 1990)
- Patricia Casey, 1988-90
- Maria Lohm, 1990-91

PhD dissertations

Member of the Evaluating committee at dissertations on ca 40 occasions, both at our department and at other Swedish chemistry departments.

Opponent at three dissertations:

- Ntei Abudu, Department of Chemistry, Trondheim University, October 7, 1998
- Lars Elkjaer Jörgensen, Department of Mathematics and Physics, Royal Veterinary and Agricultural University, Copenhagen, September 16, 2003
- Peter Lachmann, Department of Biochemistry and Biophysics, Stockholm University, November 23, 2015

Other international duties

Member of the committee of the International PhD school in Chemistry, University of Catania (Italy) 2010 – 2020. In this PhD school, the students write an extensive report in English after both the first and second years of their studies to get admission to the next year. Then, they do their dissertation at the end of the third year. My role was to evaluate their two first reports and this work amounted to between 8 – 11 reports per year.

In July 2018, I gave a three-day course (*The role of dioxygen in the biosphere*) for 24 PhD students in the above-mentioned PhD school.

In 2014, I was member of the committee that did the final examinations (dissertations) of five PhD candidates at the School of Graduate Studies *Drug sciences and Bioactive Substances*, University of Pisa (Italy).

Previous teaching

Between 1998 and 2010, more than 50% of my time was allocated to teaching and administrative work concerning education. After that, my teaching duties decreased to 25-

30 % in 2014 and remained so until February 2022 when I became sick. In my teaching, I have been involved with courses in basic chemistry (KEM011) and biochemistry (KEM060 for example). In addition, I have been responsible for special courses directed towards secondary school teachers in Chemistry and in Science (Naturkunskap). These courses involve teaching practice (VFU, 30 hp in total) as well as degree projects (2 x 15 hp).

In the autumn of 2017, I designed and started a new course for teachers in chemistry, *Chemistry for Teachers in Upper Secondary School* (L9KE41/LGKE41, 15 hp) which I have been responsible for every year until 2024. The course consists of the following parts.

- The Discipline of Chemistry, 5 hp (Big ideas in science, history of chemistry, current research at our department)
- Chemistry is Everywhere, 2,5 hp (Everyday chemistry, chemistry and sustainable development)
- Chemistry for Upper Secondary School, 7,5 hp (Chemistry didactics, digital resources, laboratory tools and safety, demo labs, designing and running lab exercises in school, study visits)

Supervisor or examiner of undergraduate degree projects

- Supervisor of 24 theses.
- Examiner of 42 theses (of which 34 were within the teacher education).

Previous administrative duties

My administrative work in the period 2012-2022 at our department consisted to a large part of being director of studies for courses in biochemistry, biophysics and for teacher students (20%). I have also been a member of the *Program board for chemistry* and the *Drafting committee of education* at our department.

Between 2010 and 2021, I was engaged in the overall organization of the new Secondary school teacher education program (*Ämneslärarprogrammet*) at GU. In 2012, I became assistant director of the program (25 %) and starting in 2015, I was the main director (40 %) in collaboration with Ann-Christin Randahl (from the Department of the Swedish Language, also 40 %). Together with the *Program board*, we tried to coordinate the teaching efforts from 17 different departments at GU, taking into consideration the many different educational traditions. Particularly challenging was to compose syllabuses for courses in teaching practice (VFU) as well as in the degree project courses that are common for students in all subjects. A big task during 2018 - 2020 was to coordinate the GU self-evaluation for the nation-wide evaluation of *Ämneslärarprogrammet* by the *Swedish Higher Education Authority* (UKÄ).

I have been the main responsible for developing and running a short course in Education for sustainable development (*Hållbar utveckling med människan i centrum*) common to all the students on *Ämneslärarprogrammet* (ca 250-350 students per year during 2014-2021). This element of their education consists of a series of interdisciplinary lectures and workshops, some of which take place at *The Museum of World Culture* and *Universeum* in Göteborg. Together with Ann-Christin Randahl, I was awarded the *Pam Fredman Prize 2018* for introducing the course in the education of teachers.

During 2020 and 2021, I took an active role in the organization of remote teaching during the Covid-19 pandemic, both in *Ämneslärarprogrammet* and at our department.

Examples of outreach activities

- Popular presentations of the *Nobel Prize in Chemistry 2012* for the public and for science pupils in several different upper secondary schools.
- Popular lectures on *Light and life* for science pupils at *Marie Curie days* on two occasions in 2015.
- Lecture on *Natural and artificial photosynthesis* for schoolteachers in science on NO-Biennalen, October 10th, 2017.
- I have organized the so-called *Ämnets dag* for chemistry teachers in Secondary School every autumn since 2016 and until 2024. These half-day events have attracted between 40 – 80 teachers from around the Gothenburg region. The agenda usually consists of three items: Popular presentations of the Nobel prize in chemistry and of ongoing research at our department. Then, there is time for an open discussion, for example about teaching chemistry in today's Secondary school.

Awards

- *The Hugo Theorell Award in Biophysics* 1994
- *För nit och redlighet i rikets tjänst (NOR)* 2012
- *Förtjänstfulla insatser i utbildningen* at the Faculty of Science 2017
- *Pam Fredmans pris* 2018