



UPPSALA  
UNIVERSITET

## *Curriculum Vitae*

Maja Elmgren

### ***Personal details***

Date of birth: 12<sup>th</sup> of May 1964

Civil status: Married, four children born 1994, 1995, 2001 and 2004

### ***Academic degrees***

- 1993      Doctoral degree in physical chemistry, Uppsala University
- 2013      Distinguished university teacher (excellent lärare) at the Faculty of Science and Technology, Uppsala University
- 2018      Associate professor (docent) in chemistry, Uppsala University

### ***Present position***

Associate professor (universitetslektor) in physical chemistry at Uppsala University since 1995, permanent position since 1998. Department of Physical Chemistry 1995-2005, Department of Physical and Analytical Chemistry 2006-2011, Department of Chemistry – Ångström since 2012.

### ***Assignments at Uppsala University in selection***

- 2022-      Board member of the Programme Board for Master's Programme in Environmental and Water Engineering
- 2019-      Board member of the Institute for Educational Law
- 2014-      Representative from the Faculty's Council for Educational Development (TUR) in the Advisory committee for educational (UB).
- 2013-      Deputy board member of the Centre for Discipline-Based Education Research in Mathematics, Engineering, Science and Technology (MINT).
- 2009-      Chair of the Council for Educational Development at the Faculty for Science and Technology (TUR).
- 2003-      Academic developer at the central unit for Academic Teaching and Learning.
- 1996-      Member of the Collegium of Mentors at Uppsala University
- 2014-2022   Ombudsman for Grading issues, Uppsala University
- 2020      Project leader of Educational expertise in promotion to associate professor and professor (Pedagogisk skicklighet vid befordran till universitetslektor och professor) UFV 2019/2143
- 2013-2020   Member of the Board for Appointment of Distinguished university teacher at the Faculty for Science and Technology (vice chair 2018-2020).
- 2011-2014   Representative from the Faculty's Council for Educational Development (TUR) in the Educational Board of Engineering (TUN).
- 2010-2014   Board member of the Educational Board of Science (NUN).
- 2006-2009   Director of doctoral studies at the Department Physical and Analytical Chemistry.
- 2002-2003   Chair of the working group for educational development at the Faculty of Science and Technology

- 1999-2002 Deputy board member of the Faculty board  
 1995-2001 Director of undergraduate studies at the Department of Physical Chemistry.

### ***External assignments in selection***

- 2021- Inspector of Uppsala Union of Engineering and Science Students (UTN)  
 2013- Board member of Anders Karitz stiftelse (deputy 2013-2016)  
 2012-2021 Member in the Swedish national committee for chemistry  
 1998-2019 Member of the supervisory board at Studentbokhandeln, Uppsala.  
 2016 Guest editor of NordSTEP's special issue on Life and Work in Academia  
 2010-2016 National representative, IUPAC's Committee on Chemistry Education  
 2012-2015 Task group chairman for the project *Best practice in the use of Learning Outcomes in Chemistry Education*. Financed by IUPAC and CCE.  
 2012-2014 Editor of the Journal *Högre utbildning* (Principal editor 2014)  
 2001-2010 Chair (2007-2010) and member in the jury for the Disa Prize, founded by Uppsala University and Studentbokhandeln in Uppsala to further popular science writing  
 2008-2009 Educational specialist in a national NSHU-supported project, to develop chemistry education at Lund, Karlstad and Uppsala University: Kemi i förändring - KUL (Karlstads universitet, Uppsala universitet, Lunds universitet)

### ***Appointment as external evaluator***

- External assessor of 15 Master programs at the Swedish University of Agricultural Sciences, 2020, 2021 and 2022.  
 Convening chair in the assessment panel of doctoral education at the IT Department at Uppsala University 2021  
 PhD thesis committee member: Jennifer Leijon, Technology, Uppsala University, 2020; Anna Danielsson, Physics, Uppsala University, 2007  
 External reviewer of licentiate thesis: Anders Nimmermark, Chemistry, Chalmers University, 2014  
 External assessor in the assessment process of the applications to the Pedagogical Academy at LTH, Lund university, 2018  
 Expert evaluator of scientific and educational proficiency for an appointment as assistant professor in in Mathematics, science, or technology education, with a focus on higher education, Umeå University, 2021; associate professor in Education Research at Oslo Metropolitan University, 2019; associate professor in Science education at Örebro University, 2018  
 Expert evaluator of scientific proficiency for an appointment as associate professor in Academic development at Chalmers University, 2012  
 Expert evaluator of educational proficiency for professorships, associate professorships and appointments as distinguished university teachers at Chalmers University of Technology, Karlstad University, Lund University, Mälardalen university, Oslo Metropolitan University, Stockholm University, the Swedish University of Agricultural Sciences, Södertörn university, Umeå University and University of Gothenburg.  
 Reviewer of manuscripts in e.g. Journal of Chemical Education, Teaching & Learning Inquiry, International Journal for Academic Development and Nordic Journal of Educational Policy, and of abstracts for e.g. the European Conference on the Scholarship of Teaching & Learning 2015 in Cork, Ireland and 2017 in Lund, Sweden.

### ***Conference organisation and invited talks***

Invited speaker at the national conference on university chemistry education SPUCK XI, and conferences organised by the National Bologna group, Lund University, University of Gothenburg, Umeå university and Swednet, as well as events at KTH Royal Institute of Technology, Malmö University, Karlstad University, Umeå University and the Swedish University of Agricultural Sciences

Main organiser of the National conference on Physical chemistry education 2001.

Organiser of several conferences at the Faculty of Science and Technology, Uppsala University.

### ***PhD supervision***

2021- Sofie Ye at Department of Chemistry – Ångström laboratory (co-supervisor)

2016- Robin Samuelsson at Department of Physics and Astronomy, Physics Education (co-supervisor)

2013-2018 Anders Johansson at Department of Physics and Astronomy, Physics Education (co-supervisor)

2012-2017 Sara Levander at Department of Education (co-supervisor)

1999-2002 Johan Kostela at Department of Physical chemistry (co-supervisor)

### ***Master and bachelor supervision***

Supervision of three master students in physical chemistry, one master student in sustainable development and two bachelor students and one master student in chemistry education.

### ***Research experience***

Research experience from physical chemistry, chemistry and physics education research, as well as the broad field of higher education.

***Research in physical chemistry:*** Studies of photoelectrochemistry, fundamental characteristics of amperometric biosensors, as well as electrochemical properties and diffusion of redox active molecules in self-assembled systems, resulting in ten articles in international peer-review journals.

***Chemistry and physics education research:*** Initiation and leadership of an international research project, funded by the International Union of Pure and Applied Chemistry (IUPAC), with participants from seven countries in three continents, in which chemistry bachelor programs in Europe, Australia and the USA were compared, and critically evaluated. Cultural aspects have been studied in two different settings, one exploring how students' encounter with quantum mechanics contributes to their development towards becoming physicists, and another (VR-funded) project investigating university science teachers as teacher educators and how science content and culture are manifested in teacher education. Initiation of a study performed in collaboration with colleagues in physics education research, on student understanding of entropy the entropy concept before and after a course in chemical thermodynamics. Thermodynamics is also the focus of an ongoing project regarding how learning challenges can be overcome through exploration of thermal phenomena with infrared cameras. Finally, involvement in studies concerning students' understanding of scientific modelling, especially in the areas of kinetics and thermodynamics. These projects have given rise to eight articles in international peer-review journals, a book chapter, and several conference contributions.

***Research in higher education:*** Research interest in the constant development and formation of academia, be it through collegial leadership, strategic efforts or gatekeeping functions. Investigations of the roles of educational leaders at department level, strategic leadership and assessment in doctoral education, and the decisive processes as hiring and promotion of academics. This has resulted in an article, a book chapter, several reports and papers in conference proceedings, as well as a book on academic teaching, condensing research on academic teaching and learning.

### ***Experience from teaching, course coordination, and educational development***

Extensive teaching experience, ranging from teaching and supervising physical chemistry at all levels and in several different programs, to educating colleagues in higher education and academic leadership. In addition, influence of teaching and learning as an academic leader.

***General chemistry and Physical chemistry at basic and advanced level:*** Extensive experience as course director, examiner as well as lecturer on e.g. thermodynamics, kinetics, spectroscopy, intermolecular forces and chemical bonding. Numerous educational projects and leadership initiatives to develop seminars, laboratory exercises and examination with intention of improving creativity, critical and scientific thinking, and metacognition.

***Doctoral education:*** *Electrochemistry* and *Introduction to PhD studies*. Course director, examiner and teacher.

***Teacher education:*** *Natural science for teaching in primary school*. Theme responsible, teacher and part in development team. *In-service training in chemistry and chemistry education*. Teacher. *Science Education Project in Chemistry*. Teacher, supervisor, examiner.

***Higher education, Academic leadership and Academic development:*** *Academic teacher training course*, *Scholarly teaching in science and technology*, *Course design and development*, *Mentoring in science and technology*, *Ethics in science and engineering education*, *Supervising PhD students*, *Educational Leadership and Strategic leadership in doctoral education*. Course director and teacher. Development of most of these courses from scratch, and substantial further development of others.

***Strategic national courses:*** *Strategic academic development* and *Assessment of educational proficiency*. Part of course leading team, teacher, and mentor for participants.

### ***Awards***

2011 Medal for merit from Uppsala Science and Technology Student Union

2001 The Distinguished Teaching Award from Uppsala University

### ***Publications***

19 publications in international scientific journals. Three books and extensive reports, two of which in different editions. Several book chapters, small reports and articles in other journals. More than 50 contributions in conferences with peer review. 15 paper in proceedings. Citations according to Web of Science: 323. Citations according to Google Scholar: 806. Google Scholar h-index 14, and i10-index 20.

## ***List of academic works***

### **Articles in international scientific journals**

1. Samuelsson, C. R., Ho, F.M., **Elmgren, M.** & Haglund, J. (2023) Looking for solutions: students' use of infrared cameras in calorimetry labs. *Chemistry Education Research and Practice*. 24 (1) 299 – 311. DOI: 10.1039/D2RP00178K
2. Levander, S., Forsberg, E. & **Elmgren, M.** (2020). The meaning-making of educational proficiency in academic hiring: a blind spot in the black box. *Teaching in Higher Education*, 25(5), 541-559. DOI: 10.1080/13562517.2019.1576605
3. Samuelsson, C. R., **Elmgren, M.**, Xie, C. & Haglund, J. (2019). Going through a phase: Infrared camera in a teaching sequence on evaporation and condensation. *American Journal of Physics* 87, 577-582. DOI: 10.1119/1.5110665
4. Samuelsson, C. R., **Elmgren, M.** & Haglund, J. (2019). Hot Vision: Affordances of Infrared Cameras in Investigating Thermal Phenomena. *Designs for Learning*, 11(1), 1–15. DOI: <https://doi.org/10.16993/dfl.94>

5. Rodriguez, J. M. G., Bain, K., Towns, M., **Elmgren, M.** & Ho, F. M. (2019). Covariational reasoning and mathematical narratives: investigating students' understanding of graphs in chemical kinetics. *Chemistry Education Research and Practice*. 20 (1) 107-119. DOI: 10.1039/C8RP00156A
6. Johansson, A., Andersson, S., Salminen-Karlsson, M., & **Elmgren, M.** (2018). "Shut up and calculate": The available discursive positions in quantum physics courses. *Cultural Studies of Science Education*. 13(1), 205-226. DOI: 10.1007/s11422-016-9742-8
7. Haglund, J., Andersson, S., & **Elmgren, M.** (2016). Language aspects of engineering students' view of entropy. *Chemistry Education Research and Practice*. 17, 489-508. DOI: 10.1039/C5RP00227C
8. Haglund, J., Andersson, S. & **Elmgren, M.** (2015). Chemical engineering students' ideas of entropy. *Chemistry Education Research and Practice*. 16, 537-551. DOI: 10.1039/c5rp00047e
9. **Elmgren, M.**, Ho, F., Åkesson, E., Schmid, S. & Towns, M. (2014). Comparison and Evaluation of Learning Outcomes from an International Perspective: Development of a Best-Practice Process. *Journal of Chemical Education*. 2015, 92 (3), pp 427-432. DOI: 10.1021/ed500542b
10. Kostela, J., **Elmgren, M.** & Almgren, M. (2005) Electrochemical properties and diffusion of a redox active surfactant incorporated in bicontinuous cubic and lamellar phase. *Electrochemical Acta* 50 (16-17) 3333-3340. DOI: 10.1016/j.electacta.2004.12.006
11. Kostela, J., **Elmgren, M.**, Kadi, M. & Almgren, M. (2005) Redox activity and diffusion of hydrophilic, hydrophobic, and amphiphilic redox active molecules in a bicontinuous cubic phase. *Journal of Physical Chemistry B* 109 (11) 5073-5078. DOI: 10.1021/jp048088g
12. Kostela, J., **Elmgren, M.**, Hansson, P. & Almgren, M. (2002) Electrochemical properties of an amphiphilic viologen in differently charged micelles. *Journal of Electroanalytical Chemistry* 536 (1-2) 97-107. DOI: 10.1016/S0022-0728(02)01208-1
13. Larsson, T., **Elmgren, M.**, Lindquist, S.-E., Tessema, M., Gorton, L. & Henriksson, G. (1996) Electron transfer between cellobiose dehydrogenase and graphite electrodes. *Analytica Chimica Acta* 331 (3) 207-215. DOI: 10.1016/0003-2670(96)00136-5
14. Eng, L.-H., **Elmgren, M.**, Komlos, P., Nordling, M., Lindquist, S.-E. & Neujahr, H. Y. (1994) Viologen-based redox polymer for contacting the low-potential redox enzyme hydrogenase at an electrode surface. *Journal of Physical Chemistry* 98 (28) 7068-7072. DOI: 10.1021/j100079a029
15. **Elmgren, M.**, Lindquist, S.-E. & Sharp, M. (1993) Charge propagation through a redox polymer film containing enzymes - effects of enzyme loading, ph and supporting electrolyte . *Journal of Electroanalytical Chemistry* 362 (1-2) 227-235. DOI: 10.1016/0022-0728(93)80025-D
16. **Elmgren, M.**, Nordling, M. & Lindquist S.-E. (1993) The influence of flow-rate on biosensors based on redox enzymes incorporated in a redox polymer mounted in a thin-layer flow cell. *Analytical Biochemistry* 215 (2) 261-265. DOI: 10.1006/abio.1993.1584
17. Nordling, M., **Elmgren, M.**, Ståhlberg, J., Pettersson, G. & Lindquist, S.-E. (1993) A combined cellobiose oxidase glucose-oxidase biosensor for hplc determination online of glucose and soluble celloextrines. *Analytical Biochemistry* 214 (2) 389-396. DOI: 10.1006/abio.1993.1513
18. **Elmgren, M.**, Lindquist, S.-E. & Henriksson, G. (1992) Cellobiose oxidase cross-linked in a redox polymer matrix at an electrode surface - a new biosensor. *Journal of Electroanalytical Chemistry* 341 (1-2) 257-273. DOI:10.1016/0022-0728(92)80487-O
19. Vidarsson, H., **Elmgren, M.** & Lindquist, S.-E. (1988) Photoelectrochemical etching of polycrystalline TiO<sub>2</sub> thin-film electrodes. *Journal of Electroanalytical Chemistry* 255 (1-2) 143-154. DOI: 10.1016/0022-0728(88)80010-X

### Books, book chapters and reports

20. Forsberg, E., Levander, S., & **Elmgren, M.** (2022). Peer Review in Academic Promotion of Excellent Teachers. In *Peer review in an Era of Evaluation* (pp. 245-274). Palgrave Macmillan, Cham.
21. **Elmgren, M.** & Scheutz S. (2022). Ett värn för rättssäker examination: Betygsombudsmannen vid Uppsala universitet. In *Utbildningsmiljö och utbildningsrätt: från förskola till forskarexamen*. Iustus förlag.

22. **Elmgren, M.** et al. (2021). *Pedagogisk skicklighet vid befordran till universitetslektor och professor – Slutrapport*. Uppsala: Uppsala universitet.
23. Ho, F. M., **Elmgren, M.**, Rodriguez, J. M. G., Bain, K. R., & Towns, M. H. (2019). Graphs: Working with Models at the Crossroad between Chemistry and Mathematics. In Towns et al.(ed); *It's Just Math: Research on Students' Understanding of Chemistry and Mathematics*. ACS Symposium Series; American Chemical Society: Washington, DC, 2019.
24. **Elmgren, M.** & Henriksson A.-S. (2018). *Academic Teaching* (2nd [rev.] ed.) Lund: Studentlitteratur. (First edition: Elmgren, M. & Henriksson A.-S. (2014) (Revised English version of *Universitetspedagogik*).
25. **Elmgren, M.**, Forsberg, E., Lindberg-Sand, Å. & Sonesson, A. (2016) *The formation of doctoral education* Lund: Lunds universitet. (Revised English version of *Ledning för kvalitet i forskarutbildningen*.)
26. **Elmgren, M.** & Henriksson, A. (2016). *Universitetspedagogik*. (3rd [rev.] ed.) Lund: Studentlitteratur. (First edition: Elmgren, M. & Henriksson A.-S. (2010). *Universitetspedagogik*. Stockholm: Norstedts.)
27. **Elmgren, M.**, Forsberg, E., Lindberg-Sand, Å. & Sonesson, A.(2014) *Ledning för kvalitet i forskarutbildningen*. Stockholm. Sveriges universitets- och högskoleförbund (SUHF)/Expertgruppen för kvalitetsfrågor
28. Pears, A., Andersson, S. & **Elmgren, M.** (2012) Hur ser Teknisk-naturvetenskapliga fakultetens lärare på undervisning och lärande? Uppsala: Teknisk-naturvetenskapliga fakulteten
29. Andersson, S., Andersson Chronholm, J., Jakobsson, T., Larsson, J., Sjöström, H., Koyi, H., Eriksson, A. & **Elmgren, M.** (2011) *Rangordningsövningar i naturvetenskap*. Uppsala: Universitetstryckeriet.
30. **Elmgren, M.** *Förebilder och auktoriteter*. In El Gaidi, K. & Högfeldt, A.-K. (ed.) (2009). Den beprövade erfarenheten: Pedagogiska utvecklare : ett yrkeskunnande i vardande. Stockholm: KTH.
31. **Elmgren M.**, Hedin A. & Thelander K. (2000). *Och plötsligt var jag studierektor: en belysning av studierektorsrollen och dess möjligheter*. Uppsala: Uppsala universitet.

## Editorship

32. **Elmgren, M.**, Folke-Fichtelius, M., Hallsén, S., Román, H., Wermke, W. (red.) (2016). *Att ta utbildningens komplexitet på allvar: En vänskrift till Eva Forsberg*. Uppsala: Uppsala universitet
33. **Elmgren, M.**, Forsberg, E. & Geschwind, L. (2016). Editorial: Life and Work in Academia. *NordSTEP* 2:34001 (as guest editor of *NordSTEP*'s special issue on Life and Work in Academia 2016).
34. Sonesson, A., & **Elmgren, M.** (2014). Högre utbildning för vidare perspektiv. *Högre utbildning*, 4(2), 93-94. (as editor-in-chief)
35. Sonesson, A., & **Elmgren, M.** (2014). Kritisk kollegial granskning och Högre utbildning. *Högre utbildning*, 4(1), 1-4. (as editor-in-chief)
36. Sonesson, A., **Elmgren, M.**, Fjellström, M., Geschwind, L., & Larsson, M. (2014). Högre utbildning drar tillbaka artikeln” Är marknadsanpassad forskningsanknytning möjlig? Professionsutbildningar möter akademins nya krav”. *Högre utbildning*, 4(2), 161. (as editor-in-chief)