Curriculum Vitae, jan 2025

Name:	Lars Bruno Ulrik Kraft
Background/Experience	Unique experience from working hands-on as betong-construction worker, engineering degree, to research, PhD, as well as many years of Consultancy specialization in concrete and concrete structures.
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Summary

I have an extensive knowledge, working as a construction worker with concrete as well as years of academic research and consulting. The research at Uppsala University resulted in a PhD, ”Calcium aluminate-based cement as dental restorative materials”, which was published in December 2002.

Working as a professional consultant and employee I have been responsible for several development and research projects, mainly related to cement-bonded materials, but also projects on environmental improvements and occupational health for concrete workers.

As a researcher/consultant at CBI – the Swedish Concrete Institute (RISE) 2007-21, I lead some research projects, I conducted investigations of concrete damage as well as assessing the status of various concrete structures. Doing so I also provided information for relevant measures to ensure a prolonged continued function (service life, strength, economy, aesthetics).

I consider myself a generalist and have devoted myself to many different scientific areas. My main area of knowledge of inorganic materials is concrete, mainly related to high abrasion resistance, cracking (shrinkage/expansion) and deterioration processes. Most of my consulting assignments deals with condition assessments and damage repair.

Cement- och Betonginspektörerna NN AB, (CBI NN AB) was founded in 2021, as an independent professional resource for assess the condition of concrete structures, to check their status and also write technical descriptions for the repair of such damaged concrete structures. So far, we have had 15 assignments, including damage investigations of concrete slabs, inspection of concrete mixing water and inspection of concrete facades on a water tower

Work experience in more detail

CBI Cement and Concrete Institute/ RISE AB 2007 – 2020:

Here I was engaged in three different types of assignments.

I. Condition assessments and damage assessments.

During 2007-2009 I performed condition assessments and damage investigations on different types of concrete structures. Later I also carried out similar investigations. Often on concrete floors that had problems with cracks, an area that I have gained a lot of experience in. In the summer of 2020, I

had an assignment on a large warehouse of 200,000 m2 in Norway, with extensive damage from cracks. I have also had two major condition assessment projects that I have led, one on Kaknästornet in 2009 (an almost 200 m high concrete tower), and another on an industrial water tower in 2019. Both assignments have led to reconstructions.

II. Material analyses in optical light microscopes (OM) and electron microscopes (SEM)

In light microscope, I have determined cement quality, assessed vct-equivalent, crack types and their causes, aggregate types and air content, etc. to determine the cause of damage. SEM has mainly been used to perform EDS substance analysis to determine chemical attack agent or cement types.

III. Research projects.

2017-2020, project manager for two projects into converting asbestos cement into useful new products. After a promising start, the project got stuck finding no solution to effectively separate the transformed materials.
2009-2019, involved in four projects on concrete roads, one of which was about cycle paths for vulnerable road users. Also, a pavement concrete recipe was developed having a double wear resistance compared to a reference recipe applied on a swedish highway.
2016-2024 Ongoing PhD project on improving the working environment for concrete workers through increased use of SKB. I was co-supervisor.
2014 Development of rubber concrete recipes for bike lanes, a pioneering project.
2013-2015 Investigation into causes of delamination in concrete floors.
2016 Dehydration of concrete with the addition of Upsalite®.

Norut Technology, Narvik 2006-2007

My main mission was to evaluate whether the residual product cement kiln slag from the Norwegian cement factories could be used as a binder in soil-stabilisation. The work led to a new product at Norcem – Multicem, which has been a great success for stabilizing quick clay. The product has reduced CO_2 emissions by 125,000 tonnes compared to the using lime. Since 2006 this product has been sold in the order of 250 000 tonnes.

I also made a literature study which showed that hydrogen flouride (HF) can possibly be recycled in silicon etching processes using reverse osmosis, which led to the start of a new project in collaboration with the Scancell solar cell factory in Narvik.

Industrial doctoral student at Uppsala University and researcher at Doxa AB 1998-2004

I developed a dimensional stable mixture for dental fillings. During the work, I improved an existing theoretical model for a complete hydration of the cement matrix as well as a measurement method for expansion of the material, a kind of micro concrete. Work related to strength, adhesion, wear, biocompatibility and processes was also carried out. The material formed the basis of the material sold as Ceramir at Doxa AB.

Education

Teacher for high school, mathematics and physics[1]. (Complementary pedagogical education. 2022-2024.)

Tekn. Dr. Materials Science, Ångström Laboratory, Uppsala University, 2003.
Civ. Ing. F, Materials Science, Uppsala University, 1997.
Military service, I 21, Group Commander, Anti-Tank, 1984.
Natural Sciences High School, Hedbergska skolan, Sundsvall, 1983.

Courses in Bachelor's Programme in Construction Engineering
Building Design and Drawing, 3hp (2019)
Construction Materials, 10 hp (2019)
Structural Mechanics, 5 hp (2019)

[1] One more practice as physics teacher is planned for teachers licence approval.

Special courses

Lead Auditor QMS ISO 9001:2015, CANEA 16-20 januari, 2023.
Concrete forensics, petrography, DTI, Taastrup, 16-18 April 2011.
Repair of concrete structures – arbetsledare, CBI Institute , feb. 2008.
In-situ casting of concrete, execution class I, CBI Cement and Concrete Institute, Feb. 2008.
Crane operator course, sax cranes, boom lifts etc., Cramo, Oct 2008.
Climbing course in ropes, Klätterbolaget, Nov. 2007.
In-situ casting of concrete, execution class II, CBI, Oct. 2007.
Behaviour and Performance of Early Age Concrete, DTU, 17-23 june, 2001.
Microstructure, Transport Phenomena and Degradation of Concrete, DTU, 21-26 aug. 2000. QMS ISO 9001:2015.

Personal references

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Other information such as
Employment, Research assignments and grants, Supervisions, Publications, Presentations, Patents, Types of constructions controlled for condition assessments, please make contact.