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Short description of professional development

1. Chemistry Studies at ETH Zürich, diploma degree (dipl.chem.ETH)
2. Doctorate studies in inorganic analytical chemistry at ETH Zürich, doctor degree (Dr.sc.nat.ETH), laboratory chemistry assistant for students of chemistry, of pharmacy, environmental sciences.
3. EMPA scientific collaborator for 17 years in three different positions: air chemistry (data mining, statistics, measurements), organic trace analysis and customer problems solving (dioxins, PCBs, PAH, etc.), chemical metrology (IDMS, IRM, pure materials)
4. METAS scientific collaborator for 10 years (reference vales for clinical chemical Measurement, chemical activity measurement and systems for ions, glucose, metrological reference measurements, metrology in chemistry, etc.
5. Since 2015 owner and CEO of the scientific consulting company 'atomolmetrion GmbH' SAS expert for laboratory accreditation ISO 17025, ISO 17034, ISO 17043
6. Since 2019 Associate of Metexpert Sàrl.

some additional tasks in the professional frame above:

- a. Expert for laboratory accreditation under ISO 17025 requirements
- b. Expert for CRM production under ISO 17034 requirements
- c. Lecturer in analytical chemistry
- d. Scientific adviser for chemical analytical metrology work
- e. CITAC secretary 2010-2017
- f. Reviewer for a number of analytical chemical journals
- g. Editorial board member of 'Analytical Chemistry Insights' (open source journal)

For further details see pages 2, 3 below

1976

Begin of chemistry studies at ETH

(ETH: Swiss Federal Institute of Technology (*Eidgenössische Technische Hochschule*: <https://www.ethz.ch/en.html>))

1977

Industry taste of work, start materials science studies at ETH

1978 - 1981

Chemistry study at ETH Zürich, major inorganic chemistry, physical chemistry

1981

End of chemistry studies at ETH, diploma in chemistry at ETH Zürich

(*degree*: dipl. chem. ETH) major subjects: inorganic chemistry, analytical chemistry, physical chemistry (NMR, IR, XRF, AAS-FAAS, ICP-OES, ESR, atomic and molecular spectrometry) crystallography

1981

Chemistry laboratory at JOWA Industrial bakery for Migros in Volketswil: Project work in rheology of jam and liquids, replacement of artificial food colours by natural identic colours in food products, colour measurement, programming for flour quality

(*Migros: largest Swiss retail business chain of stores IOWA bakery productions sites*)

1982

Extra studies: Radiochemistry and radiation protection, part I, at ETH Zürich and PSI Würenlingen

(*PSI: Paul Scherrer Institute in Würenlingen, formerly the Swiss Institute for reactor science, <https://www.psi.ch/psi-home>*)

1983

Radiochemistry and radiation protection, part II, at ETH Zürich and PSI Würenlingen

1988

PhD, in analytical chemistry at ETH (*degree*: Dr. sc. nat. ETH)

„Katalytische Adsorptionspolarographie von Molybdän VI und ihre Anwendung in der Spurenanalyse“ at the laboratory for inorganic chemistry at ETH,

ETH doctoral thesis supervisors: Prof. Dr. Balázs Magyar (**inorganic analytics**), Prof. Dr. Walter Schneider (**inorganic chemistry**), Prof. Dr. Werner Stumm (**water chemistry and environment**)

1988 - 1989

EMPA Dübendorf, scientific collaborator, air chemistry,

Project leader air chemistry and environment: ozone, peroxyacetylnitrate, sulfur dioxide, nitrogen oxides, volatile organic carbons, gas measurement, data mining, statistics modelling, SAS-programming, etc.

(*EMPA: Swiss Federal Institute for Materials Science and Research, formerly: Swiss Federal Institute for Materials Testing and Research*)

1990 – 1996

EMPA Dübendorf, head of mass spectrometry laboratory, organic chemistry,

Organic trace analysis identification and measurements (dioxins, PCBs, PAH, brominated dioxins, chlor-organic compounds, field studies, waste material analysis, HRGC-HRMS, double focusing mass spectrometry, project work, accidents cause finding reports and

investigations for customers, work in DIN-groups, CEN, certification work within BCR (Griepink, Mayer, Brussels), PCBs in waste oils, soils, etc.

1996 (6 month)

IRMM first natural scientific stagiaire of Switzerland at EU:

Paul De Bièvre, Philip Taylor, traceability, Mg-IDMS, isotopic work, CRM production,

(IRMM: EU Institute of Reference Materials and Measurements in Geel Belgium)

1996 - 2005

EMPA St.Gallen, head of mass spectrometry laboratory, project leader, water chemistry, Build up and operate new laboratories für metrology in chemistry, metal purification and vacuum sublimation laboratory, MC-ICP-MS mass spectrometry, precision weighing lab, sample preparation laboratory, isotope abundance ratios: Sr, U, Cd, Pb, B, Mg, etc., Cd-atomic weight measurement together with BAM (Berlin), food origin work using isotopes (cheese, cider, meat), IDMS key comparisons (BIPM, Paris)

1988 - 2001

Lecturer for analytical chemistry at Technikum Winterthur

(now: Zürich University für Applied Sciences, ZHAW)

2005-2015

METAS, head of chemistry laboratory, water chemistry

Build up and operate chemistry lab for precision ion analytics, IC, ion selective electrodes, glucose sensor, chemical mass measurements, osmometry, precision titrations, Karl-Fischer water measurements, hydrogen reference electrode, alcohol measurements, refractometry, voltammetry, clinical applications, etc.

CCQM work, EURAMET project on reference activity measurements of mixed serum like electrolytes of water type, quality assurance expert for chemistry laboratories at PTB Braunschweig, Germany, JCTLM review team electrolytes, chemical activity measurements by ISE's

(METAS: Swiss Federal Institute of Metrology, in Bern-Wabern

before: Bundesamt für Metrologie, even earlier: Eidgenössisches Amt für Mass und Gewicht)

additional tasks:

2007 - 2015

Member of the scientific advisory board for the French national metrology laboratory LNE ([laboratoire nationale de métrologie et d'essais, Paris, France](http://laboratoire.nationale.de.metrologie.et.d.essais.Paris.France))

2002 - today

Swiss accreditation system (SAS), expert in analytical chemistry for ISO 17025, ISO Guide 30 series (CRM production), since 2016: ISO 17034

German accreditation system (DAkkS) expert for ISO guide 17025, BAM, Berlin

2010-2017

CITAC secretary (<http://www.citac.cc>)

(CITAC: Cooperation on International Traceability in Analytical Chemistry)

2017 - today

Owner and CEO of the company „atomolmetrion GmbH“: senior analytical chemist, scientific consulting, lecturing, micronutrients, etc.