

SHORT BIBLIOGRAPHY PROF DR CS1 JACOBUS (KOOS) FREDERICK VAN STADEN

PERSONAL INFORMATION

First name(s) / Surname(s): **PROF DR CS1 JACOBUS (KOOS) FREDERICK VAN STADEN**

Address: **PASCANI Strada Nr. 8, Bloc. 728A, Sc. B Et. 4, Ap. 52, 062085. Bucharest-6. ROMANIA.**

Telephone(s): Mobile: **+4 074 813 7871** Mobile: **+4 074 943 2360**

E-mail: **koosvanstaden2012@yahoo.com; koosvanstaden@patlab.ro**; Website: **www.patlab.ro**

Nationality: South African and Permanent Residence Romania.

Date of birth: 12 January 1945

Gender: Male

Researcher unique identifier(s) (such as ORCID: <https://orcid.org/0000-0002-9684-005X>, more than **360 peer reviewed international publications; H-index of 34 and 4966 citations** (See Clarivate Analytics; Web of Science Core Collection, 21 June 2021), **H-index of 35, RG Score of 44.64, 5128 Citations and 24 916 Reads, with a current total of 4 000 reads of the article:-Analytical continuous flow systems. where two worlds collide! from gravimetry and test tubes to flow systems to fia to sia to pat and from orsat to control room to pat to tap**- published in *Revue Roumaine de Chimie*, 60(5-6) (2015) 403-414 (See ResearchGates Score and Stats for JF van Staden 21 June 2021), **H-index of 41, i10-index of 193 and 6585 Citations** (Google Scholar Citation Profile and Stats for JF van Staden 16 June 2021)

URL for web site:(See complete CV in www.patlab.ro/ and complete CV with achievements in www.brainmap.ro; E-mail: **koosvanstaden2012**; **UEFISCDI ID (UEF-iD: U-1700-038B-0976)**)

• EDUCATION and training:

Dates: 1978; 1970; 1969; 1968

Title of qualification awarded: DSc; MSc; BSc Honns; BSc

Principal subjects/occupational skills covered: DSc (Science); Chemistry

Name and type of organisations providing education and training: University of Pretoria (DSc), University of the Orange Free-State (MSc; BSc Honns; BSc) South Africa

Level in national or international classification: DSc

• CURRENT POSITION: Work experience:

Dates (From- To): 2007 - Current

Occupation or position held: Senior Scientific Researcher 1 (Director PATLAB), Full Professor status. Professor Polytechnica University of Timisoara

Main activities and responsibilities: Director PATLAB, Research and coordinator of Different Projects, Professor Status (Supervisor) for PhD Graduates. Mentor for Post Docs.

Name and address of employer: National Institute for Research and Development in Electrochemistry and Condensed Matter-Timisoara (INCEMC), **PATLAB and Laboratory of Electrochemistry, Bucharest, 202, Splaiul Independentei Str., 060021-Bucharest, Romania**

Type of business or sector: Research/Management

• PREVIOUS POSITIONS

Dates (From- To): 2005-2006

Occupation or position held: Haward Technology Instructor and Private Consultancies, Full Professor

Main activities and responsibilities: Research, Education, Management Courses; Modern Laboratory Management, Process Technology and Engineering

Name and address of employer:  *Haward Technology Middle East*

Type of business or sector: Universities, National Institutes, Industries, Middle East (Aramco-Saudi Arabia, Dubai, Bahrein).

Dates (From- To): 1991-2004; 1987-1990; 1980 -1986; 1976-1980

Occupation or position held: Full Eminent Professor, Head of Analytical Chemistry and Process Analytical Chemistry; Associate Professor; Senior Lecturer; Lecturer



Main activities and responsibilities: Education, Research (Pure and Applied), Collaborations with Industries, Institutes, Universities, Various responsibilities, Research/Management/Postgraduate Supervisor.

Name and address of employer: University of Pretoria, Faculty of Natural and Agricultural Sciences, Department of Chemistry, 0002 Pretoria, South Africa

Type of business or sector: University

Dates (From- To): 1975-1976; 1973-1975; 1964-1973

Occupation or position held: Pretoria Technicon and University of Zululand, SASOL, South Africa

Main activities and responsibilities: Lecturer, At SASOL from Laboratory Assistant to Scientist and Section Head responsible for GC, MS and Corrosion.

Short Biography: Koos van Staden, male, Director PATLAB has more than 40 years of experience (the majority in project management on international level) in research on **process analytical and sensor technology and with various contributions to FIA, SIA, advanced Process systems with PAT with various sensors such as electrochemical, optical (chemiluminescence, fluorescence, Raman, AFM, UV/Vis, NIR)** being recognized as pioneer (with various awards), groups still ranked among top research labs **with third position in the world**, more than **360 peer reviewed international publications; H-index of 34 and 4966 citations** (See Clarivate Analytics; Web of Science Core Collection, 21 June 2021), **H-index of 35, RG Score of 44.64, 5128 Citations and 24 916 Reads, with a current total of 4 000 reads of the article:-Analytical continuous flow systems, where two worlds collide! from gravimetry and test tubes to flow systems to fia to sia to pat and from orsat to control room to pat to tap:- published in Revue Roumaine de Chimie, 60(5-6) (2015) 403-414 (See ResearchGates Score and Stats for JF van Staden 21 June 2021), H-index of 41, i10-index of 193 and 6585 Citations (Google Scholar Citation Profile and Stats for JF van Staden 16 June 2021), 3 patents, 2 books and numerous chapters in research books with well known publishers (CRC Press, Marcel Dekker, Taylor and Francis). He has more than 460 presentations at national and international level (100 as plenary, keynote and on invitation), supervised 18 PhD-students (GD Marshall, currently President of FlobalFIA, PL Kempster international expert in water management, JJ Schoeman, Prof., International Expert in Reverse Osmosis etc.), 33 MSc-students, 16 Post Docs and served in various positions in international scientific committees. He received a number of awards e.g. Sasol award and scholarship as student (1967-1970), Robertson award as excellent student (1967-1970), D F du Toit Malherbe-award for his research on Flow Injection Analysis, the prestige AECI Gold medal for his research work, the MERCK medal from SACI in 2000 for sensors and the Eminent Academic Achievement from the University of Pretoria since 1995 etc., was one of the finalists of the NSTF SET awards for 2000, 2002 and 2003 and the runner-up in 2001 (**Scientific Oscars at the Hilton, SABC TV Broadcast May 30, 2003 for Lifetime Achievers**), was the winner of the prestigious Havenga prize for Chemical Sciences of the South African Academy of Art and Science for 2000. Koos has been awarded the **JAFIA Scientific Honor Award** (Certificate and Medal) for his glorious contribution to Advance of Modern Chemical Analyses as pioneer of Flow Injection Method by The Japanese Association for Flow Injection Analysis and the Division of the Japanese Society for Analytical Chemistry. He served on International Editorial and Advisory Board of a number of international journals (Anal Lett, Anal & Bioanal Chem, Talanta, Analyst, J Flow Injection Analysis), and in various positions in the scientific community e.g. Chairman on the Commission on General Aspects of Analytical Chemistry (V 5.1) of the Analytical Chemistry Division of the International Union of Pure and Applied Chemistry (January 1996 till the end of 2001), member of the Analytical Chemistry Division of the International Union of Pure and Applied Chemistry (January 1996 till the end of 2001), titular member of IUPAC from 1994 and FELLOW from 2001, observer for Southern Africa on the Working Party of Analytical Chemists now **Analytical Division of the Federation of European Societies** for a number of years, Vice-Chairman (1989 – 1990) and Chairman (1990 – 1993) of the Chemistry Division of the South African Academy for Science and Art, Chairman of the First National Symposium in Analytical Chemistry, ANALYTICA'90, in South Africa, etc. He was/is involved in various projects with various process industries for example with **SASOL, pharmaceutical companies, Be Beers, Element 6, Anglo American, Amplats, MINTEK, National Water Research Commission** etc in RSA and international (**METROHM, SKALAR, Tecator,****

Global FIA) where he developed expertise with involvement in Process Intensification, Chemical, Electrochemical and Optical Sensors, Catalysis, Process Technologies, Catalytic Membrane (Bio)Reactors, Automotive Battery Research etc. and he served as **Project Technical Advisor in 13 projects for the European Commission since 2009 (Nanoscience, Nanomaterials, Nanotechnologies, Integration of technologies for Industrial Applications)** where he was also involved as rapporteur, independent observer, evaluator and as technical scientific reviewer.

PATLAB, the Process Analytical Technology Laboratory in Bucharest, Romania formed in 2007-2008 through the initiative of Koos van Staden after his successful application through the Capacity Program, gave him the possibility to buy essential modern research equipment in order to establish the laboratory of process analytical technology (PATLAB) as a **laboratory of excellence** in Bucharest Romania with international standards. recognized not only in Europe, but also among the worldwide scientific community. PATLAB already marked some breakthroughs in the EU e.g. **won numerous gold medals and special awards at International and National ProInvents and Innovations Exhibitions since 2009.** Recently Prof Koos van Staden was honoured when his name **PROF DR JACOBUS (KOOS) FREDERICK VAN STADEN CITATION appeared among the World's Top 2% Scientists List of Stanford University, 2021 (See Copy of Excel list of a World ranking of scientist (2%)) His name, van Staden Jacobus (Koos) Frederick is cited among the World's Top 2% Scientists List of Stanford University containing 159 684 names where Stanford University, USA, together with the publishing house Elsevier and SciTech Strategies, has created a ranking of 2% of the best scientists in the world. I am thankful to be ranked at 454 out of the total of 87137 in Analytical Chemistry.** (See also www.patlab.ro and www.brainmap.ro; E-mail: koosvanstaden2012; UEFISCDI ID (UEF-iD: U-1700-038B-0976)

On-going Grants (Please indicate "No funding" when applicable):

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>	<i>Relation to current ERC proposal²</i>
Development of Dedicated Automated Realtime Detection Systems to Monitor and Control Selected "toxic" Target Substances to Lower their Impact and Improve Quality of Sustainable Daily Life	PED-19/2017 (UEFISCDI)	142850	2017-2018	Project Leader	These are the first steps on basic research of some toxic substances to improve the quality of daily life with an introduction in process control.
Novel Innovative Chemical, Electrochemical and Optical Sensor Platforms for Reliable and Sustainable Real-Time Implementation in Automated Data-Intensive Process Systems	PCE-45/2017 UEFISCDI	202500	2017-2019	Project Leader	Here we succeeded with introduction of some sensor platforms.
New Improved Reliable Platforms with Modern Nano-Technology for On-site Real-Time Detection in Automated Data-Intensive Process MONitor and Control Systems	PCE-38/2021 UEFISCDI 2020 Call	250000	2021-2023	Project Leader	Here we try to improved reliable platforms with modern nano-technology in process control

Grant applications (Please indicate "No funding" when applicable):

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of the PI</i>	<i>Relation to current ERC proposal²</i>
High speed continuous flow	National	Confidential	1976-	Project	Starting to build my scientific

analysis and chemical analysis	Research Foundation, South Africa			Leader	leading position as pioneer and track record in Process Analytical Technology and advanced knowledge, expertise, research and management capabilities
Automation of selected methods and process systems for Fischer Tropsch Products	SASOL No funding	Confidential	1985	Project Leader	Very valuable research on Process Analytical Technology in real industry world and advanced knowledge, expertise, research and management capabilities
Heavy metals, inorganic or organic pollutants in river-, dams-, groundwater, sediments and waste waters	Water Research Commission, South Africa No funding	Confidential	1986	Project Leader	Contact and contribution was a very valuable time in water ecosystems with students and advanced knowledge, expertise, research and management capabilities
Flow Injection, Sequential Injection and Chromatographic Systems as Process Analyzers in Industry	MINTEK, South Africa	Confidential	1986	Project Leader	Introduction of Process Analyzer in industry with students as pioneer and track record in Process Analytical Technology and advanced knowledge, expertise, research and management capabilities
Flow Injection, Sequential Injection and Chromatographic Systems as Process Analyzers in Agricultural and Food Industry	National Research Foundation, and Agricultural and Food Industry South Africa,	Confidential	1983	Project Leader	Building my scientific leading position as pioneer and track record in Process Analytical Technology and advanced knowledge, expertise, research and management capabilities
ESTABLISHMENT OF A LABORATORY OF PROCESS ANALYTICAL TECHNOLOGY. PATLAB	Project financed by contract 120 CP/I/14.09.2007 , From PN II, Capacity, Module 1	500000	2007-2009	Project Leader	Building the infrastructure of PATLAB
ESTABLISHMENT OF A LABORATORY OF PROCESS ANALYTICAL TECHNOLOGY. EXTENSION1. PATLAB-EXTENSION1.	Project financed by contract 172 CP/I/02.09.2008 From PN II, Capacity, Module 1	500000	2008-2010	Project Leader	Building the infrastructure of PATLAB
DOT sensors. A new concept in sensors' technology.	PNII – Ideas (CNCSIS, 2008-2011)	200000	2008-2011	Project Leader	Advancement of my scientific leading position as pioneer and track record in Process Analytical Technology and advanced knowledge, expertise, research and management capabilities



Topic:-Hightech-based Micro/Nanostructured Sensors Devices and Microreactors in Real-time for Automated Process Analytical Multianalyte Platform Systems.	PNII-Ideas (UEFISCI, 2011-2015. Extended to 2016	212500	2011-2016	Project Leader	Building some scientific research in sensors, micro-reactors and automation
DENAMIC	FP7, EC	80 000	2012-2015	Partner	Young minds at risk?

1. Some Publications (Ten years track-record)

[1] Good Laboratory Practice in Analytical Chemistry with Modern Laboratory Management.

J. F. van Staden, *Proceedings* **55(1)** (2020) 23. **Current total Reads from Researchgate is 261**

[2] Wireless electrochemical sensors. A tool for process control. The past, present and the future. A mini-review.

J.F. van Staden, R.I. Stefan-van Staden, S.C. Balasoiu. *Crit. Rev. Anal. Chem.* **40** (4) (2010) 226-233.

<http://dx.doi.org/10.1080/10408347.2010.515450> **Current total Reads from Researchgate is 153**

[3] Flow-injection analysis systems with different detection devices and other related techniques for the in vivo and in

vitro determination of dopamine as neurotransmitter. A review. **J.F. van Staden** and R.I. Stefan-van Staden.

Talanta, **102** (2012) 34-43. <http://dx.doi.org/10.1016/j.talanta.2012.05.017>.

[4] Graphene based dot microsensors used for the screening of urine for adenine, guanine and Epinephrine.

J. F. van Staden, R. Georgescu, R. I. Stefan-van Staden and I. Calinescu.

Journal of the Electrochemical Society, **161(2)**, (2014), B3014-B3022. DOI: 10.1149/2.002402jes.

[5] Application of phthalocyanines in flow- and sequential-injection analysis and microfluidics systems: A review.

J.F. van Staden. **Talanta**, **139** (2015) 75-88. <http://dx.doi.org/10.1016/j.talanta.2015.02.026>

[6] Analytical continuous flow systems. Where two worlds collide! From gravimetry and test tubes to flow systems to

FIA to SIA to PAT and from Orsat to control room to PAT to TAP. **J.F. van Staden**. **Total Reads 3650**

Revue Roumaine de Chimie, **60(5-6)** (2015) 403-414. <http://web.icf.ro/rrech/>

[7] L.A. Gugoasa, R.I. Stefan-van Staden, **J.F. van Staden**, B. Calenic, J. Legler. New platforms for fast assessment

of levels of testosterone, dihydrotestosterone and estradiol in children's saliva.

Analytical Letters, **49(2)** (2016) 335-341. <https://doi.org/10.1080/00032719.2014.978502>

[8] **Jacobus (Koos) Frederick van Staden**, Roxana-Georgiana Nuta, and Georgiana-Luiza Tatu (Arnold). Determination

of Nitrite from Water Catchment Areas Using Graphite Based Electrodes.

Journal of the Electrochemical Society, **165** (13) (2018) B565-B570. doi: 10.1149/2.0311813jes

[9] Mariana Mincu, Raluca-Ioana Stefan-van Staden and **Jacobus Frederick van Staden**. Molecular recognition

of aflatoxin M1 in water and milk samples.

Electroanalysis **31(6)** (2019) 1034-1039. <https://doi.org/10.1002/elan.201900017>

[10] Raluca Stefan-Van Staden, Alexandrina Moscalu-Lungu and **Jacobus (Koos) van Staden**. Nanostructured Materials

Used for Pattern Recognition of Bisphenols in Waste Water Samples.

2. Books/ chapters (including monographs) :

- [1] Basic components and automation. Chapter 3. J F van Staden in J L Burguera. (ed.) **FLOW INJECTION ATOMIC SPECTROSCOPY**. Marcell Dekker, Inc., New York. USA. (1989) pp 49 - 102.
- [2] "*Electrochemical Sensors in Bioanalysis*" **R.I. Stefan**, J.F. van Staden and H.Y. Aboul-Enein **Marcel Dekker Inc.**, New York, USA, 2001.
- [3] "*Laboratory Auditing for Quality and Regulatory Compliance*" D.C. Springer, **R.I. Stefan** and J.F. van Staden. **Taylor and Francis**, New York, USA, 2005.
- [4] "*Enantioselective Biosensors*" (Chapter 13) in **CHIRAL SEPARATION TECHNIQUES. A PRACTICAL APPROACH**. **R.I. Stefan**, J.F. van Staden and H.Y. Aboul-Enein. G. Subramanian (Editor) Wiley-VCH, Weinheim, Germany, 2006.
- [5] "*Enantioanalysis of S-Captopril using an enantioselective, potentiometric membrane electrode*" (Procedure 3) in **ELECTROCHEMICAL SENSOR ANALYSIS**. **R.I. Stefan-van Staden**, J.F. van Staden and H.Y. Aboul-Enein. S Alegret, A Merkoci (Eds). Elsevier, Amsterdam, The Netherlands, (ISBN: 978-0-444-53053) 2007.
- [6] "*Biosensors Technology*" (Chapter 21) in **EWING'S ANALYTICAL INSTRUMENTATION HANDBOOK. 4th Edition**. **R.I. Stefan-van Staden**, J.F. van Staden and H.Y. Aboul-Enein. Edited by Nelu Grinberg, Sonia Rodrigues CRC Press, Taylor and Francis Group. USA, March 1, 2019.

Patents

- [1] Procedure for the design of a sensor for early diagnosis of cancer. STOC- μ SENS-CMD
R I van Staden and J F van Staden B1125050/2010, OSIM/Romania
- [2] Enantioselective DOT Sensor and procedure for its construction.
R I van Staden and J F van Staden A/01120/2010, OSIM/Romania
- [3] Sistem de Scanare pentru analize biomedicale.
R I van Staden and J F van Staden a/1013753/2016, OSIM/Romania

3. Scientific presentations

- [1] Sensors and biosensors for multicomponent analysis using flow systems. **J.F. van Staden**, R. I. van Staden. **Modern Analytical Methods 2009 (dedicated to the 50th Anniversary of Nobel Prize in Polarography, J Heyrowsky)**. Prague, Czech Republic. 9 - 13 December 2009. (Invited).
- [2] DOT Sensors – New Tools for Biomedical Analysis. **J. F. van Staden** and R.I. Stefan-van Staden. **IMCS'13, 13th International Meeting on Chemical Sensors, 11 – 14 July 2010, Perth, Australia**. (Invited).
- [3] DOT Sensors. J. F. van Staden. **Diaspora Conference, 22nd – 24th September 2010, Bucharest, Romania**. (Invited).
- [4] Nanotechnology in the Flow Domain of Process Analysis. **J. F. van Staden**. **1st International Conference on Analytical Chemistry. Analytical Chemistry for a Better Life, Targoviste, Romania, September 18 - 21, 2012** (Invited Key note).
- [5] Graphene Based Microsensors for the Assay of Adenine, Guanine and Epinephrine. **J. F. van Staden**, R. Georgescu. **224th Meeting of ECS, 27 October – 1 November, 2013, San Francisco, CA, USA** (Invited keynote).
- [6] Crisis in the Food Industry:- Is there a solution in real-time finding the source before, and along the distribution line before the hazard strikes? **J.F. van Staden**. **International Workshop Challenges in Food Chemistry, 31 May-1 June 2013, Constanta, Romania**. (Invited Keynote).
- [7] Combined dot sensors for food, pharmaceutical and biological analysis. **J.F. van Staden** and R.I. van Staden. **224th ECS Meeting, 17 October-1 November 2013, San Francisco, USA**. (Invited Keynote)
- [8] Analytical continuous flow systems. Where two worlds collide! From gravimetry and test tubes to flow systems to FIA to SIA to PAT and from Orsat to control room to PAT to TAP. **J.F. van Staden**.



2nd International Conference on Analytical Chemistry (RO-ICAC'2014), 17 - 21 September 2014, Targoviste, Romania. (Invited Plenary lecture)

[9]. Reliable, sustainable, sufficient and convenient devices and/or systems for real-time interactive monitoring and control. Jacobus (Koos) F van Staden **41st ARA, Congress of the American Romanian Academy of Arts and Sciences, 2-5 August 2017, PALACE, Sinaia, Romania.**

[10] Tubular Reactors as Chemical Sensors. Jacobus F. van Staden (**Keynote**) **4th International Conference on Analytical Chemistry, September 1 – 3, 2018, Bucharest, Romania**

[11] Environmental emerging pollutants from our ecosystems resources! Do we still have safe and secure sustainable water systems to supply suitable drinking water? **Jacobus F. van Staden 21st INTERNATIONAL SYMPOSIUM – SIMI 2018 “THE ENVIRONMENT AND THE INDUSTRY”, September 20-21, 2018, Bucharest, Romania (Invited lecture)**

5. Research projects

Koos van Staden served as **Project Technical Advisor** in 13 projects for the **European Commission** since 2009 (**Nanoscience, Nanomaterials, Nanotechnologies, Integration of technologies for Industrial Applications**) where he was also involved as rapporteur, independent observer, evaluator and as technical scientific reviewer. **PATLAB, the Process Analytical Technology Laboratory in Bucharest, Romania** formed in 2007 -2008 through the initiative of Koos van Staden after his successful application through the Capacity Program, gave him the possibility to buy essential modern research equipment in order to establish the laboratory of process analytical technology (PATLAB) as a **laboratory of excellence** in Bucharest, Romania with international standards recognized not only in Europe, but also among the worldwide scientific community (more than 70 publications, 3 patents and numerous excellent international awards as innovators at international fairs). Previous research projects were PNII – Partnerships (ANCS, 2007-2010) – New microsensors based on porphyrins for medical, pharmaceutical and food analysis. In this project the first stochastic sensors were developed for analysis of pharmaceutical products, e.g., ascorbic acid, dopamine, captopril, oseltamivir phosphate; cancer biomarkers. Results:- 10 research papers in ISI journals, and two patents; PNII – Ideas (CNCSIS, 2008-2011) – DOT sensors. A new concept in sensors' technology. Stochastic DOT microsensors were developed for the assay of dopamine and ascorbic acid. Results:-8 research papers in ISI journals, 3 patents; FP7, DENAMIC, partner (2012-2015) Our role is to design new stochastic and amperometric sensors for the assay of neurotransmitters; PNII – Ideas (UEFISCDI, 2011-2014) Topic:- “design and validate new stochastic sensors for the biomedical analysis”; PNII-Ideas (UEFISCI, 2011-2015; Two Capacity Projects – on which the infrastructure of the laboratory was build (2007-2009). Currently Director of PATLAB in Romania, actively involved in Research as Senior Researcher and coordinator of Different Projects, Professor with the Status (Supervisor) for PhD Graduates (Currently Supervisor for PhD-students at the Politechnica University of Timisoara and Politechnica University of Bucharest) and as MENTOR for Post Docs and in a number of international organizations. PATLAB already marked some breakthroughs in the EU e.g. **won numerous gold medals and special awards at International and National ProInvents and Innovations Exhibitions since 2009.**



² Describe clearly any scientific overlap between your ERC application and the current research grant or any grant application.