

UNIVERSITY OF PRETORIA
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

1. BIOGRAPHICAL SKETCH

1.1 GENERAL INFORMATION

Surname	Slabber			Maiden name	N/A				
First names	Johannes Francois Marius			ID Number	390119 5054 081				
Citizenship	South Africa			Title	Prof/ Dr	Female	<input type="checkbox"/>	Male	<input checked="" type="checkbox"/>
Place of birth	Beaufort West, Cape Province			Date of birth	19 January 1939				
Population group	<input type="checkbox"/>	African	<input type="checkbox"/>	<input type="checkbox"/>	Coloured	<input type="checkbox"/>	<input type="checkbox"/>	Indian	<input type="checkbox"/>
	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	White	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Other (Please specify)	
Marital status	Divorced			Direct Telefax No.	012 420 6632				
Direct Telephone	012 420 2193			E-mail	johan.slabber@up.ac.za				
Residential address	5 Spiral Walk, Menlo Park PRETORIA.			Postal address	Po Box 70175, The Willows 0041				

1.2 LANGUAGE PROFICIENCY

List the languages that you understand and indicate level of proficiency (read, write, speak)

Afrikaans: Read write speak

English: Read Write speak

German: Read

1.3 HIGHEST SCHOOL QUALIFICATION

INSTITUTION	SUBJECTS	DISTINCTIONS
Matriculation: Technical High School Bloemfontein RSA		3

1.4 ACADEMIC QUALIFICATIONS OBTAINED					
Degree/ Diploma	Field of study	Higher education institution	Period	Year of graduation	Distinctions
BSc. B. Eng (Electrical)	(Electrical	Stellenbosch University	1956 to 1960	1960	1
	Reactor Operations Supervision	Oak Ridge School of Reactor Technology Tennessee, USA	1964 to 1966	1965	
Doctorate	D. Mechanical Engineering	University of Pretoria, Pretoria		1979	

Please attach academic records – highest qualification

1.5 WORK EXPERIENCE TO DATE		
Name of employer	Capacity and/or type of work	Period
University of Pretoria	NNR Research Chair/Host Coordinator	1 August 2017 to Present
University of Pretoria	Temporary-Full Time Professor	1 October 2010 to 31 July 2017
University of Pretoria	Extra-ordinary Professor	1 January 2010 to 30 September 2010
Massachusetts Institute of Technology	Annual lecturing at the Nuclear Plant Safety Course of the MIT	2007 to 2009
University of North West	Extra-ordinary Professor	2005 to Present
PBMR company (PTY) LTD	Chief Technology Officer	December 2005 to March 2010
International Atomic Energy Agency (Vienna)	Nuclear Material Safeguards Inspector	February 1994 to June 1999
Integrators of Systems Technology (IST)	Chief Systems Engineer	October 1989 to February 1994
Atomic Energy Corporation of South Africa	General Manager Reactor Technology	January 1987 to August 1989
Atomic Energy Board	Manager of Reactor Development Department	January 1979 to December 1986
Atomic Energy Board	Head of Reactor Engineering Division	January 1971 to December 1978
Atomic Energy Board	Head of Reactor Utilization Department	March 1970 to December 1970
Oak Ridge National Laboratory Tennessee United States of America	At the Atomic Energy Board and for a period of 18 Months at the Oak Ridge School of Reactor Technology (ORSORT) in the United States	March 1964 to February 1966
South African Railways and Harbours	Assistant Electrical Engineer	January 1961 to February 1964

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2. TEACHING AND LECTURING DUTIES

2.1 Courses/modules presented: UNDERGRADUATE

Course	Level (second year, etc.)	Academic Institution	Degree/ Diploma	Compilation of study guides (Yes or No)	Curriculum design (Yes or No)
Nuclear Engineering	Final	UP	B.Eng	Yes	Yes
Research Project	Final	UP	B.Eng	No	No
Design Project	Final	UP	B.Eng	No	No
Professional and Technical Communication	2 nd year	UP	B.Eng	Yes	Yes

2.2 Courses/modules presented: POSTGRADUATE

Course	Level	Academic Institution	Degree/ Diploma	Compilation of study guides (Yes or No)	Curriculum design (Yes or No)
Reactor Engineering Science	Hons	UP	B.Eng (Hons)	Yes	Yes
Reactor Heat Transfer	Hons	UP	B.Eng (Hons)	Yes	Yes

2.3 Educational courses attended

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2.4 Lecturer evaluation by students (Appendix A)

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Attach a report by the Head of Department or Dean on the results or representative student evaluations made of your work in recent years.

3. RESEARCH

RESEARCH FIELD	SPECIALITY
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3.1 RESEARCH DUTIES

3.1.1 Former supervision or co-supervision (completed)

Name of student	Degree/Title of dissertation/ thesis and date	Supervisor/ Co-supervisor(s)	Duration of studies (years)
Noah Olugbenga	PhD/ Theoretical and experimental investigations of natural convection heat transfer in packed beds contained in slender cylindrical geometries	Prof JFM Slabber/Prof JP Meyer	4
A Yiannou	MSc/Nanofluid Thermal Conductivity – A Thermo-Mechanical, Chemical Structure and Computational Approach	Prof JFM Slabber/Dr J Pretorius	2
JH van Laar	MSc/Microwave-Plasma Synthesis of Nano-sized Silicon Carbide at Atmospheric	Prof JFM Slabber/Prof PL Crouse	2
Ewan Huisamen	MSc/A Thermal Hydraulic Model that represents the current configuration of the Safari-1 Secondary Cooling System	Prof JFM Slabber/Prof JP Meyer	3
ID Garbadeen	MSc/ Experimental Verification of Heat Transfer Characteristics of Carbon-Water Nonofluids at LWR Pressure and Temperature	Prof JFM Slabber/ Prof JP Meyer/Dr M Sharafpur	3
S Leith	MSc/Investigation of the Boiling Heat Transfer Phenomena on the Surface of Water Cooled Silicon Carbide Fuel Cladding When the Flow Direction is Vertically Upwards	Prof JFM Slabber/Prof JP Meyer	3
M Alfama	The theoretical and experimental investigation of the heat transfer and pressure drop optimisation on textured heat transfer surfaces	Prof JFM Slabber/Prof JP Meyer	3
J Otto	X-Ray induced molecular-nuclear transitions in Lithium Deuteride	Prof JFM Slabber	2
C Govinder	Theoretical analysis and design, construction and testing of a flow loop for the study of generalized forced and natural convection boiling heat transfer phenomena on typical light-water nuclear reactor fuel pin configurations	Prof JFM Slabber/Prof JP Meyer	4

3.1.2 Current postgraduate students

Name of student	Degree enrolled for and date of first registration	Project title	Supervisor	Co-supervisor(s)	Year of registration
Wayne Boyes	PhD	The Design and Safety Analysis of an Advanced Micro Reactor	Prof JFM Slabber	Prof JP Meyer	2
Elton Jiti	Masters	An integrated thermal-hydraulic system CFD	Prof JFM Slabber		2

		model of an Advanced Micro-Reactor core using Flownex			
Wessel van Zyl	Masters	Experimental investigation into the heat transfer capabilities of a natural convection heat pipe heat exchanger utilising Lead Bismuth Eutectic as working fluid.	Prof JFM Slabber		2
Matthew Greaver	Masters	Thermal Transient analysis of SiC in Accident Tolerant Fuel Pellet and enhancement of heat transfer	Prof JFM Slabber		2

3.1.3 Obtaining research funds

Origin of research funds (e.g. contract research, THRIP, international funding organisations, other(s))	Title of research project or programme	Duration	Money allocated (R)

3.2 RESEARCH OUTPUT

3.2.1 Publications in refereed accredited journals

3.2.2 Papers *accepted* for publication in refereed accredited journals

JH van Laar, JFM Slabber, JP Meyer, IJ vd Walt, GJ Puts, PL Crouse "Microwave-Plasma Synthesis of

Nano-sized Silicon Carbide at Atmospheric Pressure" *Ceramics International*.

Michal Chudy, George Thopil, Johan Slabber **"Estimation of Occupational Compensation Based on a Linear-Quadratic Methodology for the Nuclear Industry" *Safety Science* 2018**

Olugbenga Noah, Johan Slabber, Josua P Meyer **"Experimental Validation in Slender Cylindrical Geometries" *Nuclear Technology* March 2018**

Olugbenga Noah, Johan Slabber, Josua P Meyer **"Investigation of Natural Convection Heat Transfer Phenomena in Packed Beds Lead Way Toward New Nuclear Fuel Design" *Journal of Nuclear Engineering and Radiation Science* July 2015**

3.2.3 Papers submitted for publication in refereed accredited journals

Noah Olugbenga, Johan Slabber, Josua Meyer **Theoretical and experimental investigation of natural convection heat transfer in packed beds contained in slender cylindrical geometries. *International Journal of Nuclear Engineering and Design***

Noah Olugbenga, Johan Slabber, Josua Meyer **Modelling of a porous region for natural convection heat transfer and experimental validation in slender cylindrical geometries. *Journal of Nuclear Engineering and Design***

Chris Govinder, Johan Slabber, Josua Meyer **"External Surface Temperature Measurements for the Heat Transfer Analysis of Internally Heated Cylindrical Clad-Tubes Subjected to External Forced Convection Bulk Water Coolant Thermal-Hydraulic Conditions" *Nuclear Engineering and Design***

Wayne Boyes, Johan Slabber **"A Comprehensive Thermo-hydraulic Neutronic and Safety Analysis of a 100 MWth Pebble Bed Reactor Core" *Nuclear Engineering and Design*" NED-D-22-002285 (Under final review)**

3.2.4 Papers presented and published in national conference proceedings

3.2.5 Papers presented and published in international conference proceedings

Noah Olugbenga, Johan Slabber, Josua Meyer **Experimental Evaluation of Natural Convection Heat Transfer in Packed Beds Contained in Slender Cylindrical Geometries. 5th International Conference on Porous Media and Applications, ICPMA2013, Romania August 2013.**

Noah Olugbenga, Johan Slabber, Josua Meyer **CFD Simulation of Natural Convection Heat Transfer from Heated Micro-Spheres and Bottom Plate in Packed Beds Contained in Slender Cylindrical Geometries. 6th International Conference on Porous Media, InterPore 2014, Wisconsin Center, Milwaukee, United State of America.**

Noah Olugbenga, Johan Slabber, Josua Meyer **Natural Convection Heat Transfer Phenomena in Packed Bed Systems**. ASME 2014 International Mechanical Engineering Congress & Exposition (IMECE2014) Montreal, Quebec, Canada

W.A BOYES, J.F.M. SLABBER, C.G. DU TOIT, F.A. VAN HEERDEN **Advanced micro reactor (AMR) core optimization and safety studies**. International Atomic Energy Agency Conference, Vienna Austria 18 – 21 October 2022

3.2.6 Papers presented and published in refereed accredited conference proceedings

3.2.7 Conference papers presented (but not published)

3.2.8 Published reports

3.2.9 Technical reports

All work done during the period at the Atomic Energy Board were published as internal reports which in general were classified as “Confidential” “Secret” or “Top Secret”
All work done at the IAEA was published as “Safeguards Confidential”

3.2.10 Books / Textbooks

3.2.11 Chapters in books

3.2.12 Registered patents

3.2.13 Patents – pending

3.2.14 Multimedia material

4 OTHER SCHOLARLY RESEARCH-BASED CONTRIBUTIONS

4.1 Participation in conferences, workshops and short courses - specify type of contribution:

4.1.1 National

Public Lecture at University of Pretoria 24 March 2011 Lecture: The Fukushima Tragedy – Is Koeberg Next? Lecture Organized by the Graduate School of Technology Management
PBMR waste minimization and reclamation Dr Johan Slabber Chief Technology Officer PBMR. Energize, May 2006
Is silicon carbide a solution for safer light-water reactor fuel? Johan Slabber Innovate Issue 09 2014 Graduate School of Technology Management, University of Pretoria
Putting nuclear power into perspective Johan Slabber Innovate Issue 09 2014 Graduate School of Technology Management, University of Pretoria
A Case for Nuclear Power in South Africa Johan Slabber The John Orr Memorial Lecture 2016 South African Institute of Mechanical Engineers
2nd Nuclear Regulatory Information Conference 16 – 18 May 2018 Panel Session 3: Small Modular Reactors. Chairman: Prof Johan Slabber

4.1.2 International

23rd International Conference on Atomic Collisions in Solids 17 to 22 August 2009, Phalaborwa Title: PBMR Technology: An Exciting Future Option Speaker
International Conference on Radioactive Nuclide Metrology and Applications 6 September 2007 Title: PBMR Technology Speaker
Securing the Safe Performance of Graphite Reactor Cores Nottingham 24 to 26 November 2009 Title: The Unique Characteristics of PBMR Speaker
Portland International Center for Management of Engineering and Technology (PICMET) International Conference 27 to 31 July 2008 Cape Town Title: PBMR Technology Contributing to a Sustainable Future Keynote Speaker
Engineers Ireland Seminar 27 Sept 2007 Dublin Title: The Pebble Bed Modular Reactor: An Attractive Future Option Speaker
10th International Council on Systems Engineering – Systems Engineering Mapmaking for an Uncertain Future Title: Lessons Learnt from PBMR Keynote Speaker
2nd International Topical meeting on High Temperature Reactor Technology, Beijing CHINA September 22 to 24 2004 Title: PBMR Nuclear Material Safeguards
2nd International Topical meeting on High Temperature Reactor Technology, Beijing CHINA September 22 to 24 2004 Title: Pebble Fuel Advantages
International Conference on the Historical Dimensions of South Africa’s Nuclear Weapons Program 9 to 11 December 2012 Talk: The South African Weapons Program Johan Slabber
77th South African Technologies Association 19 to 22 August 2003 Talk: The Pebble Bed Modular Reactor Technology Johan Slabber Talk was voted “Talk of the Congress”
Ener-Connect Webinar 2020 The South African Nuclear Weapons Program <i>Ener-connect.com webinar 7 October 2020</i>

4.2 Teamwork and collaboration with others (please specify):

Other researchers (national and international)
Other research institutions (national and international)
Industry

4.3 Membership of national and international bodies

List all the scientific associations or societies to which you belong. Name your involvement, e.g. honorary member, founder member, full member, chairperson, president, secretary, and dates of such involvement.

International Nuclear Safety Group IAEA Member for South Africa

Generation IV International Forum (GIF)

Former Member of the Steering Committee for High Temperature Reactors (until 2009)

Senior Industry Advisory Panel:

Appointed in my personal capacity to represent South Africa on this panel which provides an advisory oversight on the direction of R&D to be performed in the field of High Temperature Reactor Technology.

South African Academy of Engineering:

Fellow

South African Institute of Electrical Engineers (Nuclear Chapter) Chairperson of Science and Technology subgroup

4.4 Visits to local and overseas universities or research institutes as guest professor or researcher

Massachusetts Institute of Technology:

Annual lecturing at the **Nuclear Plant Safety Course** of the MIT Department of Nuclear Science and Engineering Summer School from 2007 to 2009

University of North West:

Annual lecturing on Reactor Safety as part of the post graduate degree in Nuclear Science and Engineering

University of Cape Town:

Lecturing on Reactor Design as part of a post graduate course in Nuclear Engineering offered by UCT (Only for one year)

5. MANAGEMENT AND ADMINISTRATIVE DUTIES (LEADERSHIP)

List your involvement in departmental activities (e.g. administrative functions), faculty (e.g. faculty committees) or other university activities

6. COMMUNITY SERVICE OR PROFESSIONAL SKILLS

6.1 Professional activities

(List project titles, institutions and communities involved, etc.)

6.2 Professional service performed

(List the courses you presented, lectures at professional associations/clubs, radio or TV appearances, external expert or appointment committee, etc.)

Discussion on KykNet program: Dagbreek gesels – Johan Slabber – You Tube <http://youtu.be/G-I-rR-3E8>

Regular discussions on Pretoria FM program “Ek wil weet” on Tuesday evenings

6.3 Professional societies

6.4 Involvement with other universities/scientific institutions

(e.g. external examiner, editor of journal, advisory council, CSIR, SA Council for Scientific Professions)

External examiner for the PhD dissertation: **An assessment for annual worker radiation dose calculation for the 400MWT PBMR plant** – AR de Clerck North West University 10 October 2013.

External examiner for the PhD dissertation: **Next generation high-temperature gas reactors: A failure methodology for the design of nuclear graphite components** – Michael P Hindley University of Stellenbosch 19 November 2014

6.5 Refereeing duties

(e.g. journals, dissertations/theses)

6.6 Evaluation status as scientist

(e.g. NRF; first evaluation and date, subsequent evaluations and dates)

6.7 Professional registration (e.g. Pr Eng)

Was registered but the financial restrictions when PBMR (Pty) closed down caused registration to lapse and consequently I am now de-registered