

# CURRICULUM VITAE

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## PERSONAL PARTICULARS

**Name:** Bincy Susan Jacobs  
**Current Designation:** Senior Lecturer  
**Work address:** C1 Lab 115, Department of Physics, University of Johannesburg, Auckland Park, Johannesburg  
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## ACADEMIC QUALIFICATIONS

**Philosophia Doctor (PhD - Physics)** 2019  
University of Johannesburg  
Thesis Title: Physical Properties of  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{Y}_x$  Alloys ( $Y = \text{V}, \text{Mn}$ )

**Bachelor of Education (BEd - Physical Science)** 2005  
University of Kerala  
Grade Achieved: Distinction

**Master of Science (MSc - Physics)** 2004  
University of Kerala  
Specialisation: Electronics  
Grade Achieved: Distinction

**Bachelor of Science (BSc - Physics)** 2002  
University of Kerala  
Grade Achieved: Distinction

## AWARDS

Proficiency award for Most Outstanding Student in 2<sup>nd</sup> year BSc Physics 2001

Proficiency award for Most Outstanding Student in 3<sup>rd</sup> year BSc Physics 2002

Frank Nabarro Prize for the best PhD oral presentation in Condensed Matter Physics at annual South African Institute of Physics (SAIP) conference 2012

Most outstanding PhD poster presentation in Condensed Matter Physics at annual South African Institute of Physics (SAIP) conference 2013

Obtained 5<sup>th</sup> position at the UJ 3MT Thesis Competition 2015

## WORK EXPERIENCE

Teacher, The Glen High School, Pretoria  
Subject Taught: Mathematics Literacy, Grades 8, 9 and 10

March - June  
2006

Lecturer in Physics, University of Johannesburg

July 2006 -  
Present

### **COURSES CO-ORDINATED/LECTURED**

1. Science, Engineering and Technology (SETH) bridging course.
2. Physics for Scientists and Engineers - extended degree (PHY1AEx).
3. Auxiliary Physics for Biological Sciences (PHY1C01 and PHY1D01).
4. Introductory Physics 1B (PHYE0B1/ PHY1B01).
5. Physics for the Life Sciences (PHYL01A/PHYL1A1) - Developed the curriculum for this course in 2014.
6. Second year Physics practicals (PHY2A and PHY2B).
7. Classical Mechanics and Special Relativity (PHY00A2/PHY002A).

### **OTHER MEMBERSHIP**

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|---|----------------|
| 1. Division for Condensed Matter Physics and Materials Science, South African Institute of Physics (SAIP): Student Representative.        | 2015 - 2018    |
| 2. Division for Condensed Matter Physics and Materials Science, South African Institute of Physics (SAIP): Member of Executive Committee. | 2018 - present |
| 3. UJ Accelerated Academic Mentorship Programme (AAMP).   | 2017 - present |
| 4. UJ Women's Leadership Development Programme (UJWLDP).  | 2019 - 2020    |
| 5. Departmental Transformation Champion and Member of the Transformation Committee of the Faculty of Science.                             | 2018 - present |
| 6. Departmental Assessment Task Team.   | 2020           |

## RESEARCH

### GRANTS RECEIVED

- |   |             |
|---|-------------|
| 1. NRF Thuthuka grant - PhD Track                             | 2012 - 2014 |
| 2. NRF lecturer replacement grant to complete doctoral degree | 2014 - 2015 |
| 3. UJ AAMP funding for lecture relief                         | 2017        |
| 4. NRF Thuthuka grant - Post PhD Track                        | 2019 – 2021 |
| 5. NRF Thuthuka grant- Post PhD Track (successful)            | 2022 – 2024 |

### PUBLICATIONS

#### Accredited and Peer Reviewed Journal Articles

1. Spin glass effects in the  $(\text{Cr}_{84}\text{Re}_{16})_{99.6}\text{Mn}_{0.4}$  alloy  
B. S. Jacobs, C. J. Sheppard, P. C. de Camargo and A. R. E. Prinsloo, AIP Advances **11** 015012 (2021).
2. Neutron diffraction study of the  $\text{Cr}_{84.7}\text{Re}_{15.3}$  alloy  
B. S. Jacobs, A. R. E. Prinsloo, A. M. Venter, Z. N. Sentsho, A. J. Studer and C. J. Sheppard, AIP Advances **11** 015037 (2021).
3. Thermal decomposition of  $\text{GdCrO}_4$  to  $\text{GdCrO}_3$ : Structure and Magnetism  
P. Mohanty, B. S. Jacobs, A. R. E. Prinsloo and C. J. Sheppard, AIP Advances **11** 015235 (2021).
4. Low temperature and magnetic field behaviour of the  $(\text{Cr}_{84}\text{Re}_{16})_{89.6}\text{V}_{10.4}$  alloy  
B. S. Jacobs, C. J. Sheppard, A. R. E. Prinsloo and L. Lodya, Journal of Applied Physics **115** 17E121 (2014).
5. Possible quantum critical behaviour in the  $(\text{Cr}_{84}\text{Re}_{16})_{100-y}\text{V}_y$  alloy system  
B. S. Jacobs, A. R. E. Prinsloo, C. J. Sheppard and A. M. Strydom, Journal of Applied Physics **113** 17E126 (2013).
6. Magnetic susceptibility studies of the  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{V}_x$  alloy system  
B. S. Jacobs, C. J. Sheppard and A. R. E. Prinsloo, Journal of Magnetism and Magnetic Materials **546** 168856 (2022).

#### Accredited and Peer Reviewed National Conference Proceedings

1. Electronic and magnetic properties of the  $(\text{Cr}_{84}\text{Re}_{16})_{100-y}\text{Mn}_y$  alloy system

- B. S. Jacobs, A. D. Faceto, C. J. Sheppard, A. R. E. Prinsloo, P. C. de Camargo and A. J. A. de Oliviera, The Proceedings of the 60<sup>th</sup> Annual Conference of the South African Institute of Physics 38 (2016).
2. Probing the magnetic order in  $(\text{Cr}_{84}\text{Re}_{16})_{100-y}\text{V}_y$  alloys using neutron diffraction  
B. S. Jacobs, A. R. E. Prinsloo, C. J. Sheppard, A. M. Venter and H. E. Maynard-Casely, Proceedings of SAIP 2014: the 59<sup>th</sup> Annual Conference of the South African Institute of Physics 47 (2015).
  3. Correlation between mathematic proficiency and performance in a first-year physics course  
E. Carleschi and B. S. Jacobs, Proceedings of SAIP 2013: the 58<sup>th</sup> Annual Conference of the South African Institute of Physics 441 (2014).
  4. Magnetic properties of epitaxial Cr/Cr<sub>99.65</sub>Ru<sub>0.65</sub> heterostructures  
A. R. E. Prinsloo, C. J. Sheppard, A. M. Venter, E. E. Fullerton, B. S. Jacobs and K. C. Rule, Proceedings of SAIP 2013: the 58<sup>th</sup> Annual Conference of the South African Institute of Physics 134 (2014).
  5. Influence of magnetic field on the transition temperature of the  $(\text{Cr}_{84}\text{Re}_{16})_{89.6}\text{V}_{10.4}$  alloy  
B. S. Jacobs, C. J. Sheppard and A. R. E. Prinsloo, Proceedings of SAIP 2013: the 58<sup>th</sup> Annual Conference of the South African Institute of Physics 37 (2014).
  6. Spin-density-wave behaviour in the  $(\text{Cr}_{84}\text{Re}_{16})_{100-y}\text{V}_y$  system  
B. S. Jacobs, A. R. E. Prinsloo, C. J. Sheppard and A. M. Strydom, Proceedings of SAIP 2012: the 57<sup>th</sup> Annual Conference of the South African Institute of Physics 69 (2014).
  7. Spin-density-wave properties of  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{V}_x$  alloys  
B. S. Jacobs, A. R. E. Prinsloo, C. J. Sheppard and A. M. Strydom, Proceedings of SAIP 2011: the 56<sup>th</sup> Annual Conference of the South African Institute of Physics 105 (2014).

## CONFERENCE PRESENTATIONS

### International Conferences

1. 12<sup>th</sup> Joint MMM/Intermag conference, Chicago, USA (2013).
2. The 58<sup>th</sup> Annual Magnetism and Magnetic Materials (MMM) conference, Denver, USA (2013).
3. The 59<sup>th</sup> Annual Magnetism and Magnetic Materials (MMM) conference, Hawaii, USA (2014).
4. The 65<sup>th</sup> Annual Magnetism and Magnetic Materials (MMM) conference, Virtual Platform (2020).

5. Physics of Magnetism Conference (PM '21), Poznan, Poland, Virtual Platform (2021).

### **National Conferences**

1. 56<sup>th</sup> Annual conference of the South African Institute of Physics, Pretoria, South Africa (2011).
2. 57<sup>th</sup> Annual conference of the South African Institute of Physics, Pretoria, South Africa (2012).
3. 58<sup>th</sup> Annual conference of the South African Institute of Physics, Richards Bay, South Africa (2013).
4. 59<sup>th</sup> Annual conference of the South African Institute of Physics, Johannesburg, South Africa (2014).
5. 60<sup>th</sup> Annual conference of the South African Institute of Physics, Port Elizabeth, South Africa (2015).
6. 64<sup>th</sup> Annual conference of the South African Institute of Physics, Polokwane, South Africa (2019).

### **INTERNATIONAL LABORATORIES VISITED**

1. Australian Nuclear Science and Technology Organisation (ANSTO) (2013 and 2014).
2. Department of Physics, Federal University of São Carlos (UFSCar) (2014).

### **INTERNATIONAL WEBINAR**

International webinar on Physical Properties of  $(\text{Cr}_{84}\text{Re}_{16})_{100-y}\text{V}_y$  alloy system which was hosted by the Research and Post Graduate Department of Physics, St Aloysius College, Edathua, India (2020).

### **COLLABORATIVE PROJECTS**

#### **National**

**Project : Neutron Diffraction Studies of  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{V}_x$  alloys**

Collaborators: Prof Andrew Venter and Ms Zeldah Sentsho, NECSA

Funding: NRF Thuthuka Funding (2012–2014) and research trust account.

Timelines: 2013 – ongoing

**Project : Electronic structure investigations of rare earth chromites**

Collaborators: Prof Emanuela Carleschi and Prof Bryan Doyle, Department of Physics, APK, UJ

Funding: NEP Apparatus funding secured by Prof Emanuela Carleschi and Prof Bryan Doyle and Chromium Research Group (CRG) funding

Timelines: 2019 – ongoing

**International**

**Project : Spin glass behaviour of the  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{Mn}_x$  alloys**

Collaborators: Prof PC de Camargo and Dr Angelo Faceto, Federal University of São Carlos, Brazil

Funding: NRF Thuthuka Funding (2012–2014)

Timelines: 2014 – ongoing

**STUDENT SUPERVISION**

1. Mr Murei Mulibana, Honours Project: “Doping Effects on structural, optical and magnetic properties of ZnO” (2020).  
Grade awarded: Distinction
2. Mr Murei Mulibana, MSc, (Current)

**PRESENTATIONS BY MASTERS STUDENT MR M MULIBANA**

**(i) Name: Physics of Magnetism (PM’21)**

**Location**: Virtual, Poznan, Poland

**Status**: International conference

**Nature of participation**: 1 Poster presentation

**Poster**: The effects of Cr and Ni doping on the structural, optical and magnetic properties of ZnO by M. Mulibana, B. S. Jacobs, C. J. Sheppard, A. R. E. Prinsloo and P. Mohanty

**(ii) Name: Asia Pacific Conference on Condensed Matter Physics  
2021(AC2MP2021)**

**Location:** Virtual, South Korea

**Status:** International conference

**Nature of participation:** 1 Poster presentation

**Poster:** Structural and Magnetic Properties of  $\alpha\text{Co}(\text{V}_{1-x}\text{Cr}_x)_2\text{O}_6$  ( $x = 0, 0.03$ )  
Compounds by M. Mulibana, P. Mohanty, A. R. E. Prinsloo, C. J. Sheppard and B. S.  
Jacobs

**REFERENCES**

1. **Prof Aletta Prinsloo**, Professor, Department of Physics, University of Johannesburg  
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Email: [cjsheppard@uj.ac.za](mailto:cjsheppard@uj.ac.za)  
Tel: +27 (0)723 241 986 (c), +27 (0) 11 559 3684 (w)
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