

UNESCO-UNISA AFRICA CHAIR IN *Nanosciences and Nanotechnology*



5 YEARS 1ST TERM REPORT

Define tomorrow.

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Deputy Director

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Chair-holder

Prof. Malik Maaza
Fellow of the African Academy of Sciences
Fellow of the Royal Society-London
Fellow of the Islamic Academy of Sciences
Fellow of the New York Academy of Sciences
Fellow of the National Academy of Sciences of India
Fellow of the European Academy of Sciences
Nanosciences African Network (Chairman)

Materials Research Department, iThemba LABS, National Research Foundation of South Africa
PO Box 722, Somerset West 7129, Western Cape Province, South Africa

Tel: +27 (0) 21 843 1149
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Personal Assistant: Ms. Cheryl ERASMUS (u2acn2@unisa.ac.za, u2acn2@tlabs.ac.za)

Statements

UNESCO “Priority Africa” program and UNESCO “2008-2013 Medium Term Strategy”

“This UNESCO award is recognition of the tremendous benefits of progress in the fields of nanoscience and nanotechnologies on our societies, our economies, and on all of us. This new branch of science works at the frontiers of knowledge. It is fast-moving, and it is exciting. UNESCO is committed to supporting the development of this new knowledge base for its potential in assisting countries and societies, including and especially developing countries.”

Hon. Mme I. Bukova, Director-General, UNESCO/Paris, 2 Nov. 2010.

African Union’s strategy “Africa’s Science and Technology Consolidated Plan of Action”

“The human capital and mobility within the continent that the Nanosciences African Network has put into action since its birth stage is of an exemplary status if one considers the achieved R&D joint outputs. Hence, the commission wishes to add its voice to the ICTP-Abdus Salam and TWAS, ...and support to the NANOAFNET.”

Hon. Prof. J.P. Ezin, Commissioner, African Union/Addis Ababa, 28 Sept. 2010.

South African vision for Africa of the Department of Science & Technology

“My department also endorsed the establishment of the Nanocentre for Africa at iThemba LABS, which began following the deliberations of the ICS-UNIDO workshop held in August last year. The centre is the continental platform for nanoscience and nanotechnology, and its aim is to produce solutions to pressing socio-economic problems related to health, water and energy.”

Hon. Dr. M. Mangena, South Africa, Minister, Science/Technology, Pretoria, 1 Feb. 2009.

Launch of the UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology

“There is no doubt that Nanotechnology will drive the industrial revolution in the 21st century and we, at UNISA, are determined to join the quest for advanced international competitiveness that Nanoscience and Nanotechnology can provide.”

Prof.T. Meyiwa, Vice-Principal: Research & Innovation, Pretoria, 19 Nov. 2018.

1. Summary and Metrics

- **Human Capital Development**
Trained Postdocs/young Scientists: 26
- **Human Capital Development**
Trained MSCs: 26
- **Human Capital Development**
Trained PhDs: 34
- **Human Capital Development**
Trained Postdocs: 14
- **Gender Ratio**
Trained Females: 28 and 51% Female to Male Ratio
- **Research Outputs/Hindex**
45(2018)/41(2013)
- **Research Outputs/Index 10**
173(2018)/147(2013)
- **Research Outputs/ISI Publications**
256
- **Research Outputs/Proceeding Publications**
26
- **Research Outputs/Book Chapter Publications**
6
- **Research Outputs/Research Translation & IP**
1
- **Research Outputs/Awards & Recognitions**
28
- **Research Outputs/Organized international Conferences**
10 (1687 participants)
- **Research Outputs/Conferences Participation**
61
- **Research Outputs/Skills Enhancement & Trainings**
14
- **Research Outputs/Seminars & Webinars**
74
- **Know How Transfer & Advanced Trainings to/for Junior Fellows**
32
- **Human Capital Mobility/Junior Visiting Fellows**
80
- **New Partnership & Implemented Collaborations**
37
- **Fundraising/Internal/External/Total**
17,439,000.00R

2. Chair's Mission and Vision

While the previous decades of the contemporary era were mainly steered by macro/micron-scale science, technology and innovation, current human society is being shaped, among others, by the modern trends driven by nanosciences and nanotechnology in view of the quest for miniaturization and societal prerogatives.

Aligned with the UNESCO's priorities as defined in its Medium-Term Strategy for 2008-2013, and fitting with the UNESCO Chairs and UNITWIN Networks platforms, this Africa chair implements & cements of implementing and cementing the trilateral partnership between UNESCO, UNISA, and iThemba LABS-National Research Foundation of South Africa in the multidisciplinary field of Nanosciences & Nanotechnology. This joint chair, the UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology (U2ACN2), aims to be the official vehicle and sustainable catalyst of the currently operational academic continental network, the NANOsciences AFrican NETWORK (NANOAFNET) which is an Abdus Salam ICTP network in Nanosciences (ICTP Network n°63).

Headquartered at UNISA main campus in Pretoria-South Africa, the mission and vision of the U2ACN2 chair is to instigate and coordinate a continental dynamic in nanosciences and nanotechnology through a significant capacity-building and a robust continental human capital mobility programs involving several HEIs in Africa and key partner institutions in the north including the UNESCO-AIEA Abdus Salam ICTP and the International Organization of Women in Sciences (OWSDW) as well as the Academy of Science for the Developing World (TWAS) among others. The multi-disciplinary approach of the U2ACN2 chair, not only cements the several fragmented Africa national efforts in nanosciences and nanotechnology, but addresses urgent societal needs in the water, energy and health sectors in Africa.

In accord with the UNESCO UNITWIN strategic orientations, the primary objectives of this continental trans-discipline joint UNESCO chair initiative are:

- i) to implement & steer a continental capacity building and a dual-based postgraduate diploma in the multi-disciplinary area of nanosciences with the chair's host institution as the driving force,
- ii) to further the human capital mobility of both junior and senior scientists within the continent and enhance their scientific visibility in the cross-border landscape of nanosciences & nanotechnology with UNISA as the central platform,
- iii) to implement targeted applied research & development programs to address specific urgent societal needs common within the continent such as cost-effective solar energy and water purification based nanotechnologies for rural areas,
- iv) to foster the E-learning platform of the operational Nanosciences African Network and sustain the nano-synergies within the continent via regular series of webinars and teleconferences in partnership with key continental and international actors,
- v) to promote information sharing and facilitate E-literature access in the various scientific disciplines as the host high education institution has the largest electronic database in the continent,
- vi) to promote and optimize the resources and R&D infrastructure sharing in the continent,
- vii) to encourage downstream nanomaterials engineering and value-adding activities in Africa, and training in acquiring entrepreneurship skills.

3. Chair's Targets & Deliverables

By attaining the major milestones of its objectives, it is expected that this joint UNESCO-UNISA-iThemba LABS NRF chair would contribute in shaping the current Science, Technology & Innovation cooperation and dynamic between Africa and the rest of the world. Indeed, due to the lack of official operational platforms, the scientific exchanges are mainly with the North. By its multi-sectorial nature, a multi-disciplinary platform such as the current U2ACN2 chair would induce an intra-continental synergy. This UNESCO-UNISA Africa joint Chair will benefit from several long standing accomplishments:

- i) a sustainable 11 years' comprehensive experience of the fully operational Nanosciences African Network (NANOAFNET), a network recognized and supported by various international organizations including the UNESCO-AIEA Abdus Salam ICTP, ICSU and the AU,
- ii) the management's know-how and management capabilities acquired within numerous national, continental and international programs since 1999,
- iii) the established global partnership/network with funding agencies and high profile education institutions with whom the chair has firm delivery performances and reliable track records,
- iv) the higher education expertise of the host institution UNISA and its R&D infrastructure with that of its major partner institution; iThemba LABS including the several channels of its mother institution; the National Research Foundation of South Africa,
- v) the established robust ties with UN agencies including UNESCO, AIEA, UNIDO, WHO, and UNECA.

The mid- and long-term deliverables of the multi-disciplinary nano-programs of the U2ACN2 are:

- i) Implementation of a postgraduate human capital development,
- ii) Implementation of an inclusive continental human capital mobility,
- iii) Sustainable technical training within a postgraduate nano-diploma,
- iv) Strategic partnerships with international cooperation agencies,
- v) Proactive bilateral & multilateral cooperation programs,
- vii) Joint and co-diploma both within Africa and internationally,
- viii) Access to large R&D facilities/infrastructure within/out of the continent,
- ix) Fundraising & top-up for non-South African junior fellows,
- x) Access to UNISA e-library (The largest and most diverse library in Africa),
- xi) Implementation of public awareness nano-programs,
- xi) Implementation of specific nano-projects with a direct societal focus:
 - “Adopt a learner flagship project” with SAASTA,
 - “Girls in science and technology” with l'Oréal-UNESCO,
- xii) Implementation of an entrepreneurial nano-program/training,
- xiii) Multi-institutional co-authorship of ISI peer-reviewed publications,
- ixv) Multi-institutional books' co-edition,
- xv) Organization & joint participation in international/regional nano-events,
- xvi) Regular webinars and video-conferencing,
- xvii) Global visibility via an updated chair website,
- xviii) Contributions in standard media, marketing brochures & annual reports.

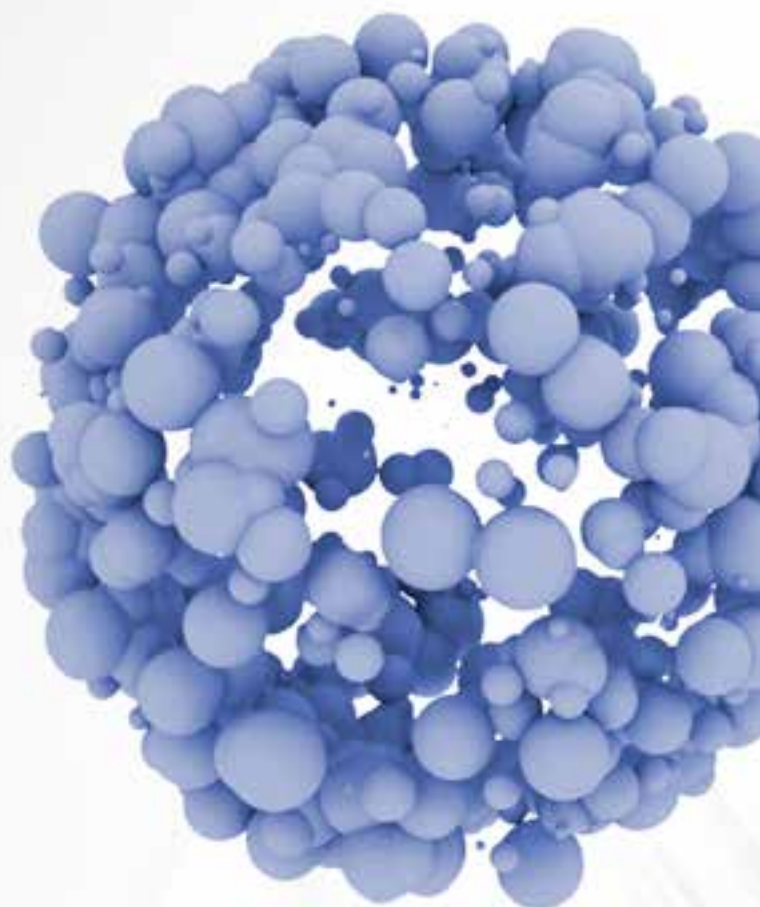


4. Chair's International Advisory Committee

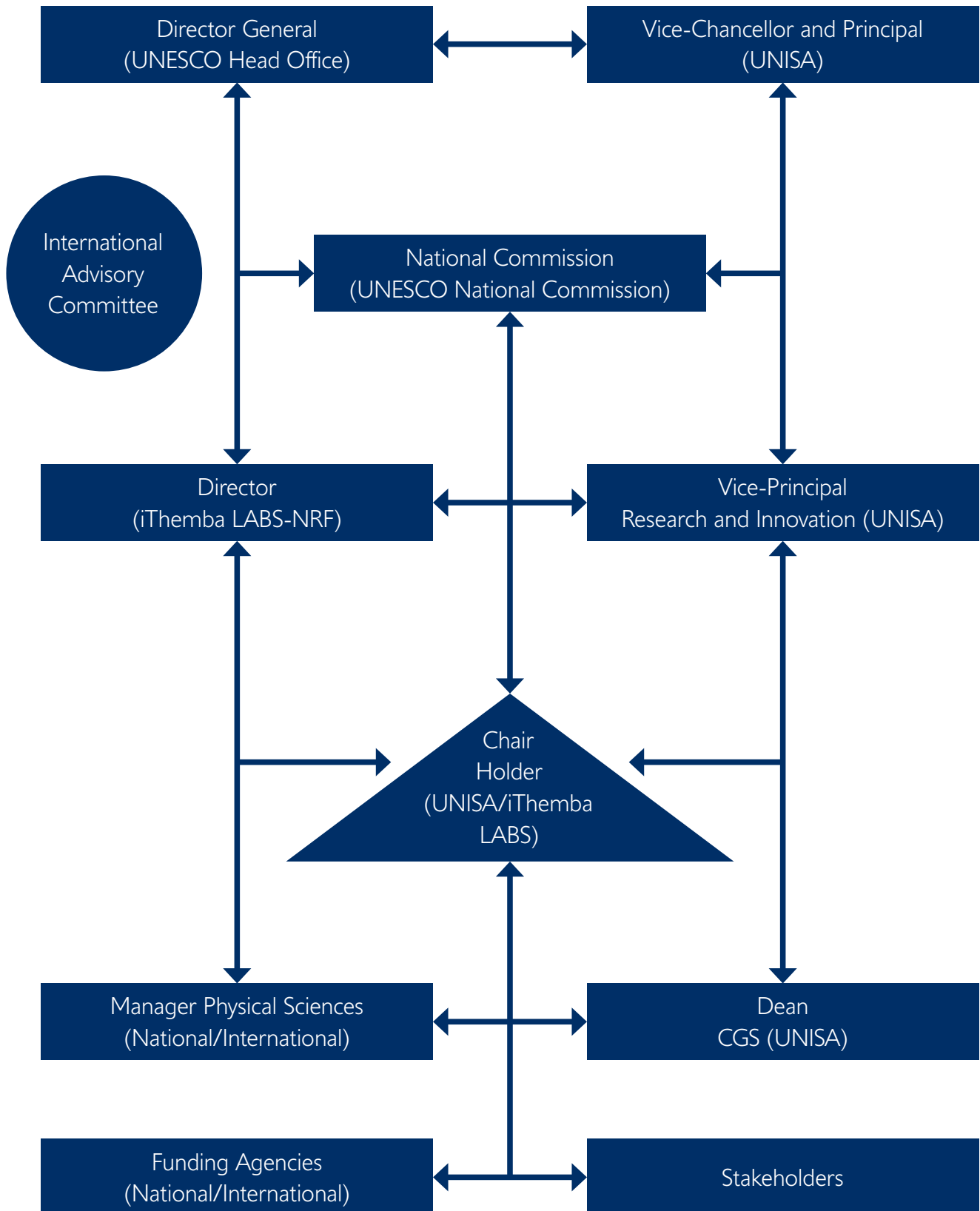
Following the approval by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the University of South Africa (UNISA) and iThemba Laboratories-National Research Foundation of South Africa (iThemba LABS), the UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology (U2ACN2) was launched in March 2013 in Pretoria-South Africa in the presence of the Chairperson of the UNESCO National Commission, and dignitaries from several African and European diplomatic missions as well as major stakeholders and policy makers. The launch ceremony was led by the Vice-Chancellor and Principal, Professor MAKHANYA. The U2ACN2 chair is based in the College of Graduate Studies (CGS-UNISA) under the direct administration of the Vice-Principal: Research, Postgraduate, Studies, Innovation and Commercialisation, Prof. T. MEYIWA and the Dean of the College of Graduate Studies, Prof. T. LESSIBA (Previously Prof. G. CUTHBERTSON) from UNISA and Dr. R. NEMUTUDI, iThemba LABS'NRF Deputy Director. The international advisory council consists of:

- **Prof. T. Meyiwa**
Vice-Principal: Research, Postgraduate Studies, Innovation & Commercialisation, UNISA, South Africa
- **Dr. R. Nmutudi**
Deputy Director, iThemba LABS-NRF, Faure - South Africa
- **Dr. S. Bahri**
UNESCO, Executive Secretary, L'Oreal-UNESCO Awards, Paris - France
- **Mr. C. Mukwevho**
Acting Secretary-General: National Commission for UNESCO, Pretoria - South Africa
- **Prof. J. Niemela**
Director, Office of External Activities, Abdus Salam ICTP, Trieste - Italy
- **Prof. M. Henini**
Nottingham University Nanotechnology & Nanoscience Centre, Nottingham - UK
- **Prof. A.Z. Msezane**
Director, CTSPS, Clark Atlanta University, Georgia - USA
- **Dr. L. Vayssieres**
Director, Int. Research Center for Renewable Energy, Xi'an Jiaotong, University, Xi'an - China
- **Dr R. Maharaj**
Executive Director, Human Capacity Prog., NRF, Pretoria - South Africa

- **Her Excellency Prof. A. Gurib-Fakim**
Honourable 6th President of the Republic of Mauritius, Ebene - Mauritius
- **Ms. M. Chaba**
Director, Emerging Research Areas, Dept. Science and Technology, South Africa
- **Prof. A.P. Kulshreshta**
Director, UN NAM S&T, New Delhi - India
- **Prof. G. Cuthbertson**
- **Prof. M. Havenga**
- **Prof. L. Teffo**
Executive Dean-CGS-UNISA, Pretoria - South Africa
- **Prof. H. Lotriet**
Director SIRGS-CGS-UNISA, Pretoria - South Africa



5. Chair's Management Organogram



6. Trained Postgraduates, Postdoctorals and Junior Scientists

TRAINED EMERGING JUNIOR SCIENTISTS AND MENTORSHIP

Dr. L. Kotsedi

South Africa, NRF-RC Fellow
2014-2019
Gender: Male

Dr. P. Sechogela,

South Africa, NRF-iTL Early career Fellow
2011-2015
Gender: Male

Dr. C. Mtshali

South Africa, NRF-iTL Early career Fellow
2011-2015
Gender: Male

Dr. P. Monkhwaketsi

South Africa, CSIR-NRF-iTL Early career Fellow
2011-2015
Gender: Male

TRAINED GROWING OUR OWN TIMBER PROGRAM FELLOWS

Dr. L. Kotsedi

South Africa, NRF-RC Fellow
2014-2019
Gender: Male

Dr. W. Saban

South Africa, NRF- Postdoctoral Fellow
2017-2019
Gender: Male

Dr. P. Zamora-Rodriguez

Mexico, U2ACN2- Postdoctoral Fellow
2017-2018
Gender: Female



TRAINED POSTDOCTORAL FELLOWS

Dr. A. Simo

Cameroon, NRF-UNISA Postdoctoral Fellow
2014-2018
Gender: Female

Dr. T. Tumbane-Sone

Cameroon, NRF-UNISA Postdoctoral Fellow
2013-2017
Gender: Male

Dr. A.S. Khamlich

Morocco, NRF-UNISA Postdoctoral Fellow
2014-2019
Gender: Male

Dr. B. Aiman

Sudan, NRF- Postdoctoral Fellow
2018-2020
Gender: Male

Dr. J. Sackey

Ghana, UNISA Postdoctoral Fellow
2018-2020
Gender: Female

Dr. A. Galmed

Egypt, NRF-SANHARP-U2ACN2 Postdoctoral Fellow
2015-2018
Gender: Male

Dr. C. Razanamahandri

Madagascar, NRF-TWAS Postdoctoral Fellow
2018-2020
Gender: Female

Dr. C. Chinwe

Nigeria, UNISA Postdoctoral Fellow
2018-2020
Gender: Female

Dr. M. Olutuji

Ghana, NRF-SANHARP-U2ACN2 Postdoctoral Fellow
2015-2018
Gender: Female

Dr. R. Morad

Iran, UNISA-U2ACN2 Postdoctoral Fellow
2018-2020
Gender: Female

Dr. M. Khenfouch

Morocco, UNISA-U2ACN2 Postdoctoral Fellow
2014-2016
Gender: Male

Dr. G. Fuku

South Africa, UNISA-U2ACN2 Postdoctoral Fellow
2015-2018
Gender: Male

Dr. K. Kaviyarasu

India, UNISA-U2ACN2 Postdoctoral Fellow
2015-2019
Gender: Male

TRAINED DOCTORAL FELLOWS

Dr. T. Thema

Botswana, U2ACN2 Doctoral Fellow
Graduated in 2016
Gender: Male

Dr. S. Zongo

Burkina-Faso, DAAD Doctoral Fellow
Graduated in 2016
Gender: Male

Dr. A. Diallo

Senegal, DAAD Doctoral Fellow
Graduated in 2016
Gender: Male

Dr. I. Madiba

South Africa, NRF Doctoral Fellow
Graduated in 2017
Gender: Male

Dr. J. Sackey

Ghana, OWSD Doctoral Fellow
Graduated in 2017
Gender: Female

Dr. N. Numan

Sudan, OWSD Doctoral Fellow
Graduated in 2018
Gender: Female

Dr. I. Tadadjeu-Sokeng

Cameroon, DST Doctoral Fellow
Graduated in 2016
Gender: Male

Dr. S. Khamlich

Morocco, ALC Doctoral Fellow
Graduated in 2014
Gender: Male

Dr. M. Khenfouch

Morocco, ALC Doctoral Fellow
Graduated in 2014
Gender: Male

Dr. E. Ismail

Egypt, NANOAFNET Doctoral Fellow
Graduated in 2015
Gender: Female

Mrs. A. Karoro

Uganda, ISP & DAAD Doctoral Fellow
Graduated in 2019
Gender: Female

Ms. A. Habtemariam

Ethiopia, NANOAFNET Doctoral Fellow
To graduate by mid 2019
Gender: Male

Mr. G.B. Ytayew

Ethiopia, NANOAFNET Doctoral Fellow
To graduate by mid 2019
Gender: Male

Mr. M. Makhangela

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by mid 2019
Gender: Male

Mr. S. Sfuno

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by mid 2019
Gender: Male

Ms. T. Khamliche

Morocco, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2019
Gender: Female

Ms. N. Kana-Ntshangase

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2019
Gender: Female

Ms. R. Akoba

Uganda, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Female

Mr. M. Hamza

Egypt, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. M. Bakayoko

Ivory Coast, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. I. Ngom

Senegal, DAAD Doctoral Fellow
To graduate by end- 2020
Gender: Male

Mr. A. Fall

Senegal, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. S.A. Abdullahi

Nigeria, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Male

Ms. N. Panya

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Female

Ms. A. Genu

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Female

Mr. M. Hamza

Egypt, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. P. Kibasomba

Democratic Republic of Congo, NRF-U2ACN2 Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. D. Kpeglo

Ghana, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. G. Gebrehiaser

Ethiopia, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. T. Mokoma

South Africa, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. B. Masara

Zimbabwe, DAAD Doctoral Fellow
To graduate by end 2020
Gender: Male

Mr. F. Mpanza

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by end- 2020
Gender: Male

Dr. C. Ndlangamandla

South Africa, NRF-U2ACN2 Doctoral Fellow
Graduate in 2015
Gender: Male

Dr. S. Shehla

Pakistan, U2ACN2 Doctoral Fellow
Graduate in 2018
Gender: Female

Mrs. G. Philander

South Africa, NRF-U2ACN2 Doctoral Fellow
To graduate by Mid- 2019
Gender: Female

TRAINED MASTER/ MSC FELLOWS

Ms. L. Mathevula

South Africa, NRF Fellow
Graduated in 2017
Gender: Female

Ms. N. Yozana

South Africa, NRF Fellow
Graduated in 2017
Gender: Female

Mr. M. Hamza

Egypt, AIMS Fellow
Graduated in 2018
Gender: Male

Mr. S. Zongo

Burkina Faso, AIMS Fellow
Graduated in 2013
Gender: Male

Mrs. A. Mboniryivuze

Rwanda, OWSD Fellow
Graduated in 2015
Gender: Female

Mrs. H. Niragire

Rwanda, OWSD Fellow
Graduated in 2015
Gender: Female

Ms. Z. Zamavezi

South Africa, MATSCI-NRF Fellow
Graduated in 2015
Gender: Female

Ms. T. Nethavhanani

South Africa, MATSCI-NRF Fellow
Graduated in 2015
Gender: Female

Mrs. T. Khamliche

Morocco, NANOAFNET Fellow
Graduated in 2015
Gender: Female

Mrs. T. Nuoh

Lybia, Lybian Gov. Fellow
Graduated in 2015
Gender: Female

Mr. O. Khfagi

Lybia, Lybian Gov. Fellow
Graduated in 2015
Gender: Male

Mr. K. Nukwa

South Africa, NRF Fellow
Graduated in 2015
Gender: Male

Mr. N. Nelissa

South Africa, NRF Fellow
Graduated in 2016
Gender: Female

Ms. N. Diouri

Morocco, NANOAFNET. PhD Fellow
Graduated in 2015
Gender: Female

Mr. A. Matiwane

South Africa, NRF Fellow
Graduated in 2018
Gender: Male

Ms. N. Panya

South Africa, NRF Fellow
Graduated in 2018
Gender: Female

Ms. N. Sintwa

South Africa, NRF Fellow
To graduate by mid 2019
Gender: Female

Ms. M. Akbari

Iran, NRF Fellow
To graduate by mid 2019
Gender: Male

Mr. K. Nukwa

South Africa, NRF Fellow
Graduated in 2015
Gender: Male

Ms. B. Makachabacha

South Africa, MATSCIE-NRF Fellow
To graduate by mid 2019
Gender: Female

Mr. F. Mabiala

Congo, MATSCIE-NRF Fellow
To graduate by mid 2019
Gender: Male

Mr. F. Jedvy

Congo, MATSCIE-NRF Fellow
To graduate by mid 2019
Gender: Male

Mr. A. Sirweque

South Africa, NRF Fellow
To graduate by mid 2019
Gender: Male

Mr. M. Thembo

Zambia, NRF Fellow
Graduated in 2017

Mr. M. Mavundla

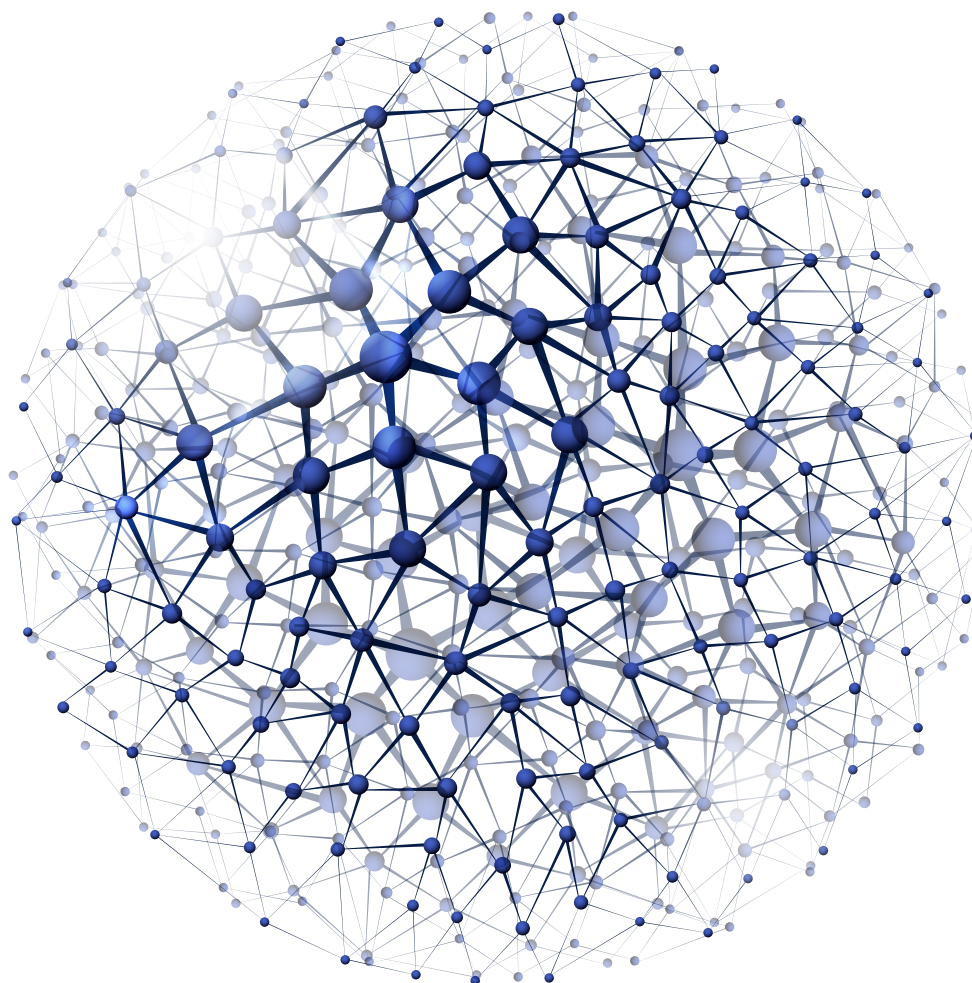
South Africa, NRF Fellow
To graduate by end 2019
Gender: Male

Mr. K. Bokang

Lesotho, NRF Fellow
To graduate by end 2019
Gender: Male

Mr. D. Havenga

South Africa, U2ACN2 Fellow
To graduate by Mid 2020
Gender: Male



7. ISI-SCI Peer-Reviewed DHET Approved International Publications

INTERNATIONAL ISI-SCI PEER-REVIEWED DHET APPROVED PUBLICATIONS

-2013-

Raman study of graphene/nanostructured oxides for optoelectronic applications

M. Khenfouch, M. Baïtoul, M. Maaza
Optical Materials 36, 2013, pp. 27-30

A classification and ranking system on the H₂ gas performance and sensor efficiency equations

B.W. Mwakikunga, S. Motshekga, L. Sikhwihilu, M. Moodley, A. Simo, B. Sone, M. Maaza
Sensors and Actuators B: Chemical 184, 170-178, 2013

Comprehensive optical study of the dragonfly *Aeshna cyanea* transparent wing

K.A. Dompreeh, M.J. Eghan, L. Kotsedi, M. Maaza
Optics Commms 297, 176-181, 2013

Effect of Wrapped Carbon Nanotubes on Optical Properties, Morphology, and Thermal Stability of Electrospun PVA Composite Nanofibers

N. Diouri, M. Baitoul, M. Maaza
Journal of Materials Chemistry B, 949108, 2013

Characterization and optimization of poly (3-hexylthiophene-2, 5- diyl) (P3HT) and [6, 6] phenyl-C61-butyric acid methyl ester (PCBM) blends for optical absorption

G. Kalonga, G.K. Chinyama, M.O. Muniyati, M. Maaza
Journal of Chemical Engineering and Materials Science 4(7), 93-102, 2013

-2014-

Z-Scan and optical limiting properties of Hibiscus Sabdarifa dye

A. Diallo, S. Zongo, S. Mthunzi, W. Soboyejo, M. Maaza
Applied Physics B: Lasers & Optics 117(3), 861-867, 2014

Phase transition in a single VO₂ nanocrystal: Potential femtosecond tunable optoelectronic nanogating

M. Maaza, A. Simo, M. Itani, T. Doyle, I. Lukyanchuk
Journal of Nanoparticle Research 16 (5), 2397, 2014

Submicronic VO₂-PVP composites coatings for smart windows applications and solar heat management

I.G. Madida, A. Simo, B. Sone, A. Maity, J.B. Kana Kana, A. Gibaud, G. Merad, F.T. Thema, M. Maaza
Solar Energy 107, 758-769, 2014

Competitive growth texture of pulsed laser deposited vanadium dioxide nanostructures on a glass substrate

B.D. Ngom, M. Chaker, A. Diallo, I.G. Madiba, S. Khamlich, N. Manyala, O. Nemraoui, R. Madjoe, M. Maaza
Acta Materialia, 65, 32-41, 2014

Thermal stability of electron beam evaporated AlxOy/Pt/AlxOy multilayer solar absorber coatings

Z.Y. Nuru, C.J. Arendse, T.F. Muller, S. Khamlich, M. Maaza
Energy Mater & Solar Cells 120 (B), 473-480, 2014

Heavy Ion Elastic Recoil Detection analysis of AlxOy/Pt/AlxOy multilayer selective solar absorber

Z.Y. Nuru, Msimanga, C.J. Arendse, M. Maaza
Applied Surface Science 298, 176-181, 2014

Photoluminescence and dynamics of excitation relaxation in graphene oxide-porphyrin nanorods composite

M. Khenfouch, J. Wéry, M. Baïtoul, M. Maaza
Journal of Luminescence 146, 33-37, 2014

Morphological and crystallographic properties of REO coatings deposited by double beam dual beam PLD

S. Khamlich, B.D. Ngom, C.K. Kotsedi, E. Manikandan, M. Maaza
Surf. Review & Letters 21 (1), 1450001, 2014

2 MeV Proton irradiation effects on ZnO single crystal

T. Secjogela, L. Kotsedi, M. Nkosi, C. Sandt, R. Madjoe, W. Przybylowicz, R. Bharuthram, M. Maaza
Surf. Review & Letters 21(1), 1450012, 2014

Surface-Interface investigation and stability of cermet based solar absorbers by grazing angle X-rays reflectometry: Pt-Al₂O₃ case

M. Maaza, Y.Z. Nuru, S. Khamlich, B.D. Ngom
Arabian Journal of Science & Engineering 39 (7), 5825-546, 2014

Effects of post-thermal treatments on morphological and optical properties of NiO/NiOH thin films synthesized by solution growth

S.U. Offiah, M. Nwodo, A. Nwanya, R.U. Osuji, M. Maaza, F.I. Ezema
Optik - International Journal for Light and Electron Optics 125 (1), 2905-2908, 2014

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Journal of Physics: Conference Series 984 (1), 012009, 2018

pH and concentration effect on the optical absorption properties of Sn (V) tetrakis (4-pirydy) porphyrin functionalized graphene oxide

O. Bajjou, A. Bakour, M. Khenfouch, M. Baitoul, B. Mothudi, M. Maaza, E. Faulques
Journal of Physics: Conference Series 984 (1), 012004, 2018

Microwave assisted growth of nanorods vanadium dioxide VO₂(R): structural and electrical properties

I. Derkaoui, M. Khenfouch, B.M. Mothudi, S.J. Moloi, I. Zorkani, A. Jorio, M. Maaza
Journal of Physics: Conference Series 984 (1), 012006, 2018

Pulsed Nd: YAG laser assisted fabrication of graphene nanosheets in water

M.C. Mbambo, S. Khamlich, T. Khamliche, B.M. Mothudi, M. Maaza
MRS Advances, 1-8, 2018

Synthesis of Platinum nanoparticles by Gamma Radiolysis

T. Cele, M. Maaza, A. Gibaud
MRS Advances, 1-21, 2018

Biosynthesis of ZnO Nanoparticles by *Adansonia Digitata* Leaves Dye Extract: Structural and Physical Properties

A.O. Kane, B.D. Ngom, O. Sakho, S. Zongo, N.M. Ndiaye, C.L. Ndlangamandla, N. Manyala, M. Maaza
MRS Advances, 1-11, 2018

Synthesis and characterization of ZnO-CuO nanocomposites powder by modified perfume spray pyrolysis method and its antimicrobial investigation

D. Saravanakumar, S. Sivaranjani, K. Kaviyarasu, A. Ayeshamariam, B. Ravikumar, S. Pandiarajan, C. Veeralakshmi, M. Jayachandran, M. Maaza
Journal of Semiconductors 39 (3), 033001, 2018

Label-free detection of HIV-1 infected cells via integration of optical tweezers and photoluminescence spectroscopy

M.Y. Lugongolo, L.L. Noto, M. Maaza, P. Mthunzi-Kufa
Optical Diagnostics and Sensing XVIII: Toward Point-of-Care Diagnostics, 2018

Growth and characterization of spectrally selective Cr₂O₃/Cr/Cr₂O₃ multilayered solar absorber by e-beam evaporation

A.B. Khelifa, S. Khamlich, Z.Y. Nuru, L. Kotsedi, A. Mebrahtu, M. Balgouthi, A.A. Guizani, W. Dimassi, M. Maaza
Journal of Alloys and Compounds 734, 204-209, 2018

Femtosecond laser assisted photo-transfection and differentiation of mouse embryonic stem cells

L. Thobakgale, S. Manoto, S.O. Lemboumba, M. Maaza, P. Mthunzi-Kufa
Optical Interactions with Tissue and Cells XXIX 10492, 1049205, 2018

Biosynthesis of pure hematite phase magnetic iron oxide nanoparticles using floral extracts of *Callistemon viminalis* (bottlebrush): their physical properties and novel biological applications

Dilawar Hassan, Ali Talha Khalil, Jabran Saleem, Abdullah Diallo, Saleh Khamlich, Zabta Khan Shinwari, Malik Maaza
Artificial cells, nanomedicine, and biotechnology, 1-15, 2018

Neutron tunneling in nanostructured systems: isotopical effect

A. Matiwane, J. Sackey, M.L. Lekala, A. Gibaud, M. Maaza
MRS Advances, 1-8, 2018

Nanostructured Characterization of *Papilio demoleus* Linnaeus Butterfly Wings

J. Sackey, P. Prevost, K.A. Dompheh, M. Maaza
MRS Advances, 1-8, 2018

Large-scale synthesis of coiled-like shaped carbon nanotubes using bi-metal catalyst

V.M. Krishna, T. Somanathan, E. Manikandan, A. Umar, M. Maaza
Applied Nanoscience 8 (1-2), 105-113, 2018

Three-dimensional characterization of laser ablation craters using high resolution X-ray computed tomography

A.H. Galmed, A. Du Plessis, S.G. le Roux, E. Hartnick, H. Von Bergmann, M. Maaza
Spectrochimica Acta Part B: Atomic Spectroscopy 139, 75-82, 2018

Novel multifunctional of magnesium ions (Mg⁺⁺) incorporated calcium phosphate nanostructures

K. Thanigai Arul, M. Ramesh, C. Chennakesavan, V. Karthikeyan, E. Manikandan, A. Umar, M. Maaza, M. Henini
Journal of Alloys and Compounds 730, 31-35, 2018

Laser-induced breakdown spectroscopy (LIBS) on geological samples: compositional differentiation and relative hardness quantification

M. Maaza, B.M. Mothudi
2018, URL: <http://hdl.handle.net/10500/24976>

ZnO doped single wall carbon nanotube as an active medium for gas sensor and solar absorber

K. Kaviyarasu, Genee T. Mola, S.O. Oseni, K. Kanimozhi, C. Maria Magdalane, J. Kennedy, M. Maaza
Journal of Materials Science: Materials in Electronics, 1-12, 2018

Nanocomposite for Solar Energy Application

Genee Tessema Mola, Xolani G. Mbuyise, Saheed O. Oseni, Wiseman M. Dlamini, Patrick Tonui, Elhadi A.A. Arbab, K. Kaviyarasu, M. Maaza
Nano Hybrids and Composites 20, 90-107, 2018

Theoretical study of electromagnetic transport in *Lepidoptera Danaus plexippus* wing scales

J. Sackey, K.A. Dompheh, B. Mothudi, M. Maaza
Heliyon 4 (1), e00502, 2018

An electrochemically active green synthesized polycrystalline NiO/MgO catalyst: use in photo-catalytic applications

X. Fuku, N. Matinise, M. Masikini, K. Kasinathan, M. Maaza
Materials Research Bulletin 97, 457-465, 2018

Electron-Impact Ionization Cross Sections for Inner L- and M-Subshells of Atomic Targets at Relativistic Energies

Abul KF Haque, Malik Maaza, Md. M. Haque, Md. Atiqur R. Patoary, Md. Alfaz Uddin, Md. Ismail Hossain, Md. Selim Mahbub, Arun K. Basak, Bidhan C. Saha
Advances in Quantum Chemistry 77, 121-165, 2018

Photocatalytic Activity and Humidity Sensor Studies of Magnetically Reusable FeWO₄-WO₃ Composite Nanoparticles

S. Poovaragan, R. Sundaram, C.M. Magdalane, K. Kaviyarasu, M. Maaza
Journal of Nanoscience and Nanotechnology 19 (2), 859-866, 2019

Structural and optical properties of ZrO_x/Zr/ZrO_x/AlxOy multilayered coatings as selective solar absorbers

N. Khoza, Z.Y. Nuru, J. Sackey, L. Kotsedi, N. Matinise, C. Ndlangamandla, M. Maaza
Journal of Alloys and Compounds 773, 975-979, 2019

-2019-

Photocatalytic Activity and Humidity Sensor Studies of Magnetically Reusable FeWO₄-WO₃ Composite Nanoparticles

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Structural and optical properties of ZrO_x/Zr/ZrO_x/AlxOy multilayered coatings as selective solar absorbers

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Journal of Alloys and Compounds 773, 975-979, 2019

PEER REVIEWED PUBLICATIONS IN CONFERENCE PROCEEDINGS

Temperature dependent electrical resistance of proton irradiated and non-irradiated C₆₀ micro-rods

Materials Today: Proceedings 2 (2015) 4053-4059 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
N. Thovhogi, C. Mtshali, L. Kotsedi, T. Doyle, M. Maaza

Metal and metal oxide transformation and texturing using pulsed fiber laser

Materials Today: Proceedings 2 (2015) 3950-3956 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
L. Kotsedi, P. Sechogela, S. M. Eaton, A.G. Demir, F. Franceschini, B. Previtali, R. Ramponi, H.C. Swart, M. Maaza

Multi-scale assembly in nano-scaled sepia melanin natural dye

Materials Today: Proceedings 2 (2015) 3988-3997 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
A. Mbonyiriyuze, Z.Y. Nuru, L. Kotsedi, B. Mwakikunga, S.M. Dhlamini, E. Park, M. Maaza

Thermochromic properties of VO₂-PVP composite coatings

Materials Today: Proceedings 2 (2015) 4006-4018 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
I.G. Madiba, A. Simo, B. Sone, L. Kotsedi, M. Maaza

Physical properties of graphene via γ -radiolysis of exfoliated graphene oxide

Materials Today: Proceedings 2 (2015) 4038-4045 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
F.T. Thema, P. Beukes, Z.Y. Nuru, L. Kotsedi, M. Khenfouch, M.S. Dhlamini, B. Julies, E. Iwuohah, M. Maaza

Investigation of nanostructures on the crepuscular 'eyespot' of the Caligo Memnon Felder butterfly

Materials Today: Proceedings 2 (2015) 4125-413 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
J. Sackey, Z. Y. Nuru, S. Berthier, M. Maaza

Selective solar absorbers' properties of laser treated electrodeposited tubular Co-Al₂O₃ nanocomposites

Materials Today: Proceedings 2 (2015) 4028-4037 (Elsevier)
7th International Symposium On Macro- and Supramolecular Architectures and Materials
A. Karoro, Z.Y. Nuru, L. Kotsedi, Kh. Bouziane, B.M. Mothudi, M. Maaza

Select Synthesis of Platinum nanoparticles by Gamma Radiolysis

Synthesis of Platinum nanoparticles by Gamma Radiolysis
T. Cele, M. Maaza, A. Gibaud
<https://doi.org/10.1557/adv.2018.233>
MRS Advances, 2018, 2537-2557

Comparative study of flat and cylindrically-shaped selective solar absorber for CSP

J.G. Mallett, S. Khamlich, M. Maaza
<https://doi.org/10.1557/adv.2018.345>
MRS Advances, 2018, 2251-2260

Select Nanostructured Characterization of Papilio demoleus Linnaeus Butterfly Wings

Nanostructured Characterization of Papilio demoleus Linnaeus Butterfly Wings
J. Sackey, P. Prevost, K.A. Dompok, M. Maaza
<https://doi.org/10.1557/adv.2018.167>
MRS Advances, 2018, 689-2696

Select Bio-synthesis of BiVO₄ Nanorods Using Extracts of Callistemon viminalis

Bio-synthesis of BiVO₄ Nanorods Using Extracts of Callistemon viminalis
H.E.A. Mohamed, B.T. Sone, M.S. Dhlamini, M. Maaza
<https://doi.org/10.1557/adv.2018.318>
MRS Advances, 2018, 2479-2486

Neutron tunneling in nanostructured systems: isotopic effect

A. Matiwane, J. Sackey, M.L. Lekala, A. Gibaud, M. Maaza
<https://doi.org/10.1557/adv.2018.228>
MRS Advances, 2018, 2609-2616

Wettability Property In Natural Systems: A Case of Flying Insects

J. Sackey, B.T. Sone, K. A. Dompok, M. Maaza
<https://doi.org/10.1557/adv.2018.367>
MRS Advances, 2018, 697-2703

Resonant photoemission spectroscopy of gamma irradiated VO₂ films

I.G. Madiba, A. Braun, N. Émond, M. Chaker, S.I. Tadjadjeu, B.S. Khanyile, M. Maaza
<https://doi.org/10.1557/adv.2018.356>
MRS Advances, 2018, 2499-2503

Laser-Induced Breakdown Spectroscopy (LIBS) on Geological Samples: Compositional Differentiation

S.N. Panya panya, A.H. Galmed, M. Maaza, B.M. Mothudi, M. A. Harith, J. Kennedy
<https://doi.org/10.1557/adv.2018.401>
MRS Advances, 2018, 1969-1983

Pulsed Nd:YAG laser assisted fabrication of graphene nanosheets in water

M.C. Mbambo, S. Khamlich, T. Khamliche, B.M. Mothudi, M. Maaza
<https://doi.org/10.1557/adv.2018.275>
MRS Advances, 2018, 2573-2580

Biosynthesis of ZnO Nanoparticles by Adansonia Digitata Leaves Dye Extract: Structural and Physical Properties

A.O. Kane, B.D. Ngom, O. Sakho, S. Zongo, N.M. Ndiaye, C.L. Ndlangamandla, N. Manyala, M. Maaza
<https://doi.org/10.1557/adv.2018.272>
MRS Advances, 2018, 2487-2497

Ion Beam Applications

Intech Open Books Publishing
Published: July 18th 2018
DOI: 10.5772/intechopen.71589
ISBN: 978-1-78923-415-2
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Magnetic Nanoparticles

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DOI: 10.5772/intechopen.71589
ISBN: 978-1-78923-415-2
Print ISBN: 978-1-78923-414-5
Copyright year: 2019

BOOK CHAPTERS

Novel Plant Bioresources: Applications in Food, Medicine, Cosmetics & Photonics, Wiley & Sons (2013)

Specific natural dyes for Photonics Applications,

Graphene Optoelectronics, Wiley & Sons (2013)

M. Khenfouch, M. Baitoul & M. Maazac
Editor: A.B.D. Rashid (Singapore)
Graphene for the elaboration of nanocomposite films for optoelectronic applications,

Recent Progress in Nanostructured Zinc Oxide Grown on Fabric for Wearable Thermoelectric Power Generator with UV Shielding

P. Veluswamy, S. Sathiyamoorthy, H. Ikeda, M. Elayaperumal and M. Maaza
Part of the book: Wearable Technologies
DOI: 10.5772/intechopen.76672

Ion Beams for Space Applications

S.I. Tadjadjeu, B.D. Ngom, S. Martin, R.R. van Zyl, M. Maaza
Part of the book: Ion Beam Applications
DOI: 10.5772/intechopen.76993

8. Participation in International Conferences

2nd International Congress on Materials & Renewable Energy (MRE 14)

8-10 August 2014, Hong Kong University of Science, Hong Kong
1 invited + 1 poster contributions

5th International Congress on Ceramics

17-21 August 2014, Beijing - China.
1 oral contribution

Nanocon 14

14-15 October 2014, Bharati Vidyapeeth University, Pune - India
1 oral contribution

Science and Applications of Thin Films (SATF 2014)

15-19 September 2014, Izmir - Turkey
1 oral + 1 poster contributions

National Consultation Workshop on the Draft Dode of Conduct for Nanotechnology Research and Development

10 July 2014, Johannesburg - South Africa
1 invited contribution

UKZN Nanotechnology Platform Workshop 2014

21-25 July 2014, KwaZulu Natal - South Africa
1 invited contribution

NanoSUR, Latin America NanoFORO 2014

27-31 October 2014, Caracas - Venezuela
2 invited + 6 poster contributions

COST Phototech School "Advanced Laser Spectroscopy in Green Phototechnology"

18-23 October 2014, Szeged - Hungary
1 invited contribution

Science & Applications of Thin Films: SATF 2014

15-19 September 2014, Izmir - Turkey
1 oral + 1 poster contributions

Botswana International University for Science & Technology Workshop on Nanotechnology

25 September 2014, Gaborone - Botswana
1 seminar

Botswana College of Agriculture Workshop on Nanotechnology

25 September 2014, Gaborone - Botswana

7th African Laser Centre Workshop

3-5 November 2014, Rabat - Morocco
1 plenary + 2 oral + 7 poster contributions

7th International Symposium on Macro- and Supramolecular Architectures and Materials (MAM 14)

23-27 November 2014, Johannesburg - South Africa
1 plenary + 6 oral + 8 poster contributions

ICTP School on Cooperative Phenomena in Condensed Matter

17 - 28 November 2014, University of Buea, Buea – Cameroon
From Bose-Einstein Condensates to Quantum Optics

IBSA Nano-Workshop 14: Advanced Materials

1-2 December 2014, UNESCO UNISA Africa Chair, Western Cape - South Africa
Reported to 2015 due to "Ebola crisis"

Regional AMRS Workshop 2014

3-4 December 2014, UNESCO UNISA Africa Chair, Western Cape - South Africa
Reported to 2015 due to "Ebola crisis"

2nd BRICS Conference on Energy & Advanced materials

4-6 March 2015, Florida - South Africa
1 Plenary, 2 Orals, 9 posters

ACOLS 2015 (African conference on Laser and Spectroscopy 2015)

08-12 March 2015, Cairo - Egypt
2 invited & regular contributions

Africa SOLAR 2015

20-27 June 2015, Ouagadougou - Burkina Faso
1 invited contribution

National Centre for Physics (NPC) 1st Nanosciences/ Nanotechnology Workshop

26-29 August 2015, Islamabad - Pakistan
5 invited contributions

AESA 2015 (Accelerating Excellence in Science in Africa)

African Academy of Sciences, 9-11 September 2015, Nairobi - Kenya

NANOSMAT 2015

13-16 September 2015, Manchester, UK
1 invited & 1 poster contributions

DST-DGRSDT 1st Joint Nanotechnology Workshop

25-30 September 2015, Algiers - Algeria

TWAS Annual Young Scientists' Conference

16-18 September 2015, Johannesburg - South Africa
3 oral contributions

International OSA Network of Students IONS 2015

1-5 September 2015, Tunis - Tunisia

1 oral contribution

2nd International Conference on Carbon Capture & Storage

UWC, 2-4 March 2015, Bellville - South Africa

1 invited contribution

7th International symposium on Macro and Supramolecular Architectures and materials

25-30 November 2015, Johannesburg - South Africa

1 invited, 5 oral & 11 poster contributions

Hercules Synchrotrons / Neutrons Training

6-24 July 2015, Taipei - Taiwan

1 poster contribution

41st National Convention of the South African Chemical Institute

1-6 December 2013, East London - South Africa

7th World Nanotechnology Conference

20-21 June 2016, Cape Town - South Africa

NANOSMAT 2016 11th International Conference on Surfaces, Coatings and Nanostructured Materials

6-9 September 2016, Aveiro - Portugal

28th World Conference of the International Nuclear Target Development Society

13-18 November 2016, Stellenbosch, Cape Town - South Africa

NANOSMAT 2017 12th International Conference on Surfaces, Coatings and Nanostructured Materials

11-13 September 2017, Paris - France

9th African Materials Research Society (AMRS) International Conference

9-14 December 2017, Gaborone - Botswana

69th Annual meeting of the International Society of Electrochemistry (ISE)

2-7 September 2018, Bologna - Italy

International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-Africa)

19-23 November 2018, Cape Town - South Africa

International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-Africa)

19-23 November 2018, Cape Town - South Africa

'Identifying and shielding radioactive element with hydride particle detector' at the IEEE NPSS International School for Real Time Systems in Particle Physics 2018

7-17 July, 2018, Cape Town - South Africa

'Gender difference in leadership' at the 5th OWSD General Assembly and International Conference in Science & Technology in the Developing World

16-19 May, Doha - Kuwait,

Women in Science at Annual South African Young Scientists' Conference

11-17 June 2018, Johannesburg - South Africa

Structural and Optical Investigation of the Nanostructure on the Wings of Idea Malabarica (Moore, 1877)" at the International Conference on Nanomaterials and Nanotechnology

6-10 December 2017, Tamil Nadu - India.

3D Printing organized by University of Stellenbosch

23-28 June 2016, Cape Town - South Africa.

Laser Safety in Various Temporal Regimes of the Centre for Scientific and Industrial Research

24-27 April 2014, Stellenbosch - South Africa

Radiation Protection, iThemba LABS

25-27 March 2014, Cape Town - South Africa

Innovation in Nanoscience, Nanotechnology and Nanosatellites Event

11-12 June 2014, Cape Town - South Africa.

Photonic Properties of Nanostructured Wings of Tree Nymph butterfly' at the 7th African Laser Center Annual Workshop

3-5 November 2014, Rabat - Morocco.

5th EOS Topical Meeting on Terahertz Science & Technology

8-11 May 2016, Pecs - Hungary

Ultrafast Phenomena in Cooperative Systems (GRS), Revealing Coupled Interactions in Complex Matter-Towards Control of Material Properties

14-19 February 2016: Tuscany, Ciocco in Lucca (Barga) - Italy

Ultrafast Phenomena in Cooperative Systems (GRS), Gordon Research Seminar Series

13-14 February 2016, Tuscany, Ciocco in Lucca (Barga) - Italy

MUST-2016 (Molecular Ultrafast Science and Technology) Annual Meeting

10-13 January 2016, Engelberg - Switzerland

ICTP Career Development Workshop for Women in Physics

12-16 October 2015, Trieste - Italy

ICTP Synchrotron Radiation Techniques and Nanotechnology

11-22 November 2013, Cape Town - South Africa

The Regional Workshop on Materials Science for Solar Energy Conversion

4-8 November 2013, Cape Town - South Africa

12th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT 2017)

11-13 September 2017, Paris - France

9th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT 2014)

8-11 September 2014, Dublin - Ireland

African Union Youth Volunteer Corps 9th Batch, Volunteer Pre Deployment Orientation Training

19-30 November 2018, Brazzaville - Congo

10th International Conference on Advances in Science, Engineering, Technology & Healthcare (ASETH-18)

19-20 November, Cape Town - South Africa

Artisanal Small-Scale Mining Conference (ASM 2018)

Johannesburg - South Africa

10th International conference On African Large River Basins Hydrology

26 November - December 2016, Ougadougou - Burkina Fasso

Evidence Information Policy Making: Water, Energy & Health, Food Health

9-11 December 2018, Pretoria - South Africa

South African Science Forum

12-14 December 2018, Pretoria - South Africa



9. International Awards and Recognitions

Abdus Salam ICTP Affiliate Centre

UNISA Science Campus Elected as a Southern Africa ICTP Affiliate Centre
Trieste - Italy, 2015

Chancellor Award: Outstanding Research Outputs

Prof. M. Maaza (U2ACN2 Chair)
Pretoria - South Africa, 2015

L'Oréal-UNESCO Sub-Sahara Award for Women in Science: Postdoctoral category

Dr. Z. Nuru (Postdoctoral U2ACN2 fellow)
Pretoria - South Africa, 2015

Swiss Government Excellence Fellowship Award: Doctoral category

Mr. I. Madiba (Doctoral U2ACN2 fellow)
Dübendorf - Switzerland, 2015
Ms. N. Numan (Doctoral U2ACN2 fellow)
Bern - Switzerland, 2015

Lindau-Nobel Foundation Award: Doctoral category

Mr. S. Zongo (Doctoral U2ACN2 fellow)
Mrs. A. Mboniyirivuze (MSc U2ACN2 fellow)
Lindau - Germany, 2015

Indian RTF-Dept. of Science & Technology Visiting Fellowship: Doctoral category

Dr. N. Thovhogi (Postdoctoral U2ACN2 fellow)
Mr. S. Zongo (Doctoral U2ACN2 fellow)
Mr. A. Diallo (Doctoral U2ACN2 fellow)
New Delhi - India, 2015

1st Best Oral Contribution Award at NANO 15: Doctoral category

Ms. J. Sackey (Doctoral U2ACN2 fellow)
Tamil Nadu - India, 2015

3rd Best Oral Contribution Award at NANO 15: Postdoctoral category

Dr. K. Kaviyarasu (Postdoctoral U2ACN2 fellow)
Tamil Nadu - India, 2015

Chinese Academy of Sciences / Xi'an University Visiting Scientist Award: Postdoctoral category

Dr. A. Simo (Postdoctoral U2ACN2 fellow)
Xi'an - China, 2015

Best oral contribution Award at 7th ALC Conference: PhD category

Mr. S. Zongo (Doctoral U2ACN2 fellow)
Rabat - Morocco, 2014

Best Poster Award at 7th ALC Conference: PhD category

Ms. A. Karoro (Doctoral U2ACN2 fellow)
Rabat - Morocco, 2014

Best Poster Award at SANHARP Conference: PhD category

Mr. I. Madiba (Doctoral U2ACN2 fellow)
Mr. S. Zongo (Doctoral U2ACN2 fellow)
Western Cape - South Africa, 2014

Election as Fellow of the Royal Society of Chemistry

Prof. M. Maaza (U2ACN2 Chair)
London - UK, 2014

Election as Fellow of the Royal Society of Chemistry

Prof. M. Maaza (U2ACN2 Chair)

Jury member of the UNESCO L'Oréal award for Women in science both in the International & SubSaharan platforms

Prof. M. Maaza (U2ACN2 Chair)

Jury member in AU African N. Nkrumah continental award in science & technology (Addis Ababa-Ethiopia)

Prof. M. Maaza (U2ACN2 Chair)

Jury member in AU African Obasanjo continental award in science, technology & innovation (Nairobi-Kenya)

Prof. M. Maaza (U2ACN2 Chair)

Springer-Nature Best Poster Award-2018

Ms. N Panya Panya (MSc U2ACN2 fellow)
Somerset West - South Africa, 2018

The National Science & Technology Forum award on Green Matter/ South Africa 2018

Prof. M. Maaza (U2ACN2 Chair)
Pretoria - South Africa, 2018

The L'OREAL-UNESCO award for Women in Science/ Sub-Sahara 2018

Mrs. T. Madima-Cele (PhD U2ACN2 Fellow)
Nairobi - Kenya, 2018

The Future Leaders-African Independent Research 2018/19 (Royal Society-UK)

Dr. Z. Nuru (U2ACN2 Postdoctoral Fellow)
Dr. B.D. Ngom (U2ACN2 Postdoctoral Fellow)
London - UK, 2018

EU International Research Cooperation Postdoctoral Programme 2018/19 (Horizon 2020)

Dr. N. Mayedwa (U2ACN2 Postdoctoral Fellow)
Brussels - Belgium, 2018

The African Union Youth Volunteer Corps Fellowship 2018/19 (African Union-AU)

Dr. C. Lovasoa-Razanamahandry (U2ACN2 Postdoctoral Fellow)
Brazzaville - Congo, 2018

Election as Fellow of the European Academy of Sciences 2017

Prof. M. Maaza (U2ACN2 Chair)
Wien - Austria, 2018

Election as Fellow of the National Academy of Science of India 2018

Prof. M. Maaza (U2ACN2 Chair)
New Delhi - India, 2018

The Global Cultural Council Jose Vasconcelos Award of Education 2018

Prof. M. Maaza (U2ACN2 Chair)
Hong Kong, 2018

The Kwame Nkrumah African Union award of Excellence in Science, Technology & Innovation 2018

Prof. M. Maaza (U2ACN2 Chair)
Addis Ababa - Ethiopia, 2018

NANOSMAT Society UK Best Poster Award 2018

Mrs. T. KHAMLICHE
Ms. N. Panya Panya (MSC U2ACN2 fellow)
Somerset West - South Africa, 2018



10. Technical and Skills Transfer Trainings

Following a significant graduation rate in 2013 and early 2014, and in view of the large population of new 1st year postgraduates, several trainings have to be organized to ensure a strong technical/scientific background both institutionally & within the neighbouring and partner HEIs. Likewise, such a robust updated technical skills cement further the job absorption of the fellows in the market .

Training in High Resolution / Electron Microscopy (HRTEM) and Scanning Electron Microscopy (SEM) Electron Microscopy Theory and Background / hands on

Electron Microscopy unit, University of the Western Cape
Bellville - South Africa, 1 August 2014

Training in Laser Induced Breakdown Spectroscopy (LIBS)

Laser Research Institute & CAF, Stellenbosch university
Stellenbosch - South Africa, 8 August 2014
Training in Pulsed Laser Deposition (PLD)

Pulsed Laser Deposition: Theoretical background & technicalities

Laser Research Institute, Stellenbosch University
Stellenbosch - South Africa, 27 August 2014
Training in X-Rays Fluorescence (XRF)

X-Rays Fluorescence

Sentrale Analitiese Fasiliteit/Central Analytical Facility
Stellenbosch - South Africa, 4 September 2014
Training in "Nano CT Scan"

Nano-scale Computed Tomography

Sentrale Analitiese Fasiliteit/Central Analytical Facility
Stellenbosch - South Africa, 1 August 2014
Training in Optical spectroscopies

NIR & UV/Vis spectroscopy, Fluorescence, Raman microscopy and Chemometrics software

Sentrale - Analitiese Fasiliteit/Central Analytical Facility,
Stellenbosch - South Africa, 13 August 2014

Programming with MATLAB, Matlab: Basic & applications

OPTI-NUM solutions, iThemba LABS
Faure, Western Cape - South Africa, 23 October 2014

Training in Sol Gel & Spin Coating

Chemistry Department, Stellenbosch University
Stellenbosch - South Africa, 7 February 2015

Training in Laser Safety by the National Laser Centre of South Africa / Laser Safety & Regulations

Materials Research Department, iThemba LABS
Training in Chemical Hazard & Waste Handling



Chemical Hazard: Regulations & Management

Materials Research Department, iThemba LABS
Faure - South Africa, 2 May 2015
Training in Terahertz Laser Spectroscopy

Ultrafast Laser TeraHertz Spectroscopy: Principle & Applications

Bern University
Bern - Switzerland, 1-31 August 2016
Training in Laser Surface Structuring

Laser Surface Nanostructuring in the Femtosecond regime

Politecnico di Milano, CNR-INFN
Milano - Italy, 15 August 2015 - 15 October 2015

RF & DC sputtering

VAST-Israel, iThemba LABS
Training in Vacuum Technologies in RF & DC modes

Atomic Force Microscopy (AFM)

English Department, Stellenbosch University



11. Gender Equity & Gender Redressment

While targeting the 50-50% objective in terms of training highly qualified postgraduates & emerging junior scientists, 25 MSCs, PhDs & Postdocs have graduated within the 5 years U2ACN2 1ST term corresponding to an average annual rate of graduation of 5 per year.

NAME	GENDER	COUNTRY	DEGREE	EMPLOYMENT
Dr. T. Madima	Female	South Africa	PhD	Staff @ Department Trade & Industry
Dr. Z. Nuru	Female	Ethiopia	PhD	Staff @ University Dar Birhan-Ethiopia
Dr. J. Sackey	Female	Ghana	PhD	Postdoc @ U2ACN2 - SA
Dr.A. Simo	Female	Cameroon	PhD	Postdoc @ IThemba LABS-NRF
Dr. N. Numan	Female	Sudan	PhD	Postdoc @ U2ACN2 - SA
Dr. M.Matinise	Female	South Africa	PhD	Postdoc @ U2ACN2 - SA
Dr. N. Mayedwa	Female	South Africa	PhD	Postdoc @ U2ACN2 - SA
Dr M. Yankey	Female	Ghana	PhD	Postdoc @ U2ACN2 - SA
Dr. R. Morad	Female	Iran	PhD	Postdoc @ Univ. U2ACN2 - SA
Dr. I. Ismail	Female	Egypt	PhD	Staff @ University of Cairo - Egypt
Ms. T. Khamliche	Female	Morocco	MSC	Follow on PHD @ UNISA - SA
Ms. N. Panya Panya	Female	South Africa	MSC	Follow on PHD @ UNISA - SA
Ms. B. Makachabacha	Female	South Africa	MSC	in progress @ UNISA - SA
Ms. T. Nethavhanani	Female	South Africa	MSC	Follow on PHD @ UNISA - SA
Mrs A. Mbonyirivuze	Female	Rwanda	MSC	Follow on PHD @ UCT - SA
Mrs. H. Niragire	Female	Rwanda	MSC	Follow on PHD @ UNISA - SA
Ms. Z. Zamavezi	Female	South Africa	MSC	Follow on PHD @ UZULU - SA
Ms. Z. Nuru	Female	Ethiopia	MSC	Follow up on PhD @ UNISA
Ms. J. Sackey	Female	Ghana	MSC	Follow up on PhD @ UNISA
Ms. N. Yozana	Female	South Africa	MSC	Follow up on PhD @ UWC
Ms. N. Sintwa	Female	South Africa	MSC	Follow up on PhD @ UNISA
Ms. N. Diouri	Female	Morocco	PhD	Staff @ MASCIR Foundation
Mrs. Molebogeng	Female	South Africa	MSC	Follow up on PhD @ UNISA
Ms. N. Kana	Female	South Africa	PhD	Staff @ Koeberg Nuclear station
Mrs. G.H. Philander	Female	outh Africa	PhD	Follow up on PhD @ UWC
Dr. C. Chinwe	Female	Nigeria	PhD	Postdoc @ U2ACN2 - SA
Dr. C. Lovasoa	Female	Madagascar	PhD	Postdoc @ U2ACN2 - SA

Coprehensive Achievements:

- 17 MSC & PhD graduations within 20
- 41 ISI-SCI Publications
- 27 Peer Reviewed Publication in Conference Proceedings
- 14 sponsored Fellowships
- OWSD-Italy / DAAD-Germany / ISP-Sweden / NRF-South Africa Partnership
- 11 International Awards



12. Seminars, Webinars and E-Learning

Strongly Correlated Materials: Case Study of VO₂ Nano-Gas Sensors

Dr. A. Simo, U2ACN2 fellow
Xi'an University - China, 2015

Mott transition nano-structured oxides and their photonics applications

Prof. M. Maaza, U2ACN2 Chair
ICTP School, University Buea - Cameroon, 2015

Anderson localization in nanoscale systems: the Case of CNTs

Prof. M. Maaza, U2ACN2 Chair
ICTP School, University Buea - Cameroon, 2015

Quantum optics in nanoscale systems

Prof. M. Maaza, U2ACN2 Chair
ICTP School, University Buea - Cameroon, 2015

Nanosciences African Network & UNESCO Africa Chair in Nano

Prof. M. Maaza, U2ACN2 Chair
NCP, Islamabad - Pakistan, 2015

Nanomaterials by green chemistry

Prof. M. Maaza, U2ACN2 Chair
NCP, Islamabad - Pakistan, 2015

Nano-materials for Solar Energy

Prof. M. Maaza, U2ACN2 Chair
NCP, Islamabad - Pakistan, 2015

Novel nanostructures for neutron optics

Prof. M. Maaza, U2ACN2 Chair
NCP, Islamabad - Pakistan, 2015

Synthesis of nano-materials by Radiolysis in mesoporous systems

Prof. A. Gibaud, Univ. Le Maine, Le Mans - France
UNISA Florida/Johannesburg - South Africa, 2015

Super CO₂ critical synthesis of CaCO₃ for drug encapsulation

Dr. T.H. Beuvier, Univ. Le Maine, Le Mans - France
UNISA Florida/Johannesburg - South Africa, 2015

Natural dyes for dye solar cells applications

Prof. E. Park, Nelson Mandela AIST, Arusha - Tanzania
Dr. R. Machunda, Nelson Mandela AIST, Arusha - Tanzania
iThemba LABS, Faure - South Africa, 2015

Terahertz laser spectroscopy for materials characterization

Prof. T.H. Feurer, University Berne - Switzerland
iThemba LABS, Faure - South Africa, 2015

Graphene & Graphene based devices

Dr. B. Aissa, Univ. Montreal (UMAQ), Montreal - Canada
iThemba LABS, Faure - South Africa, UNISA Florida/Johannesburg - South Africa, 2015

Submicron Janus particles

Prof. I. Changshu, Tsinghua University, Taiwan
iThemba LABS, Faure - South Africa, 2015

Plasma Mass productions of nano-scaled Oxides

Dr. I. Rajendran, KSRCT, kalpakam-India
iThemba LABS, Faure - South Africa, UNISA Florida/Johannesburg - South Africa, 2015

Precise engineering of polymers for organic photovoltaics

Prof. M. Luscombe, University of Washington, USA
iThemba LABS, Faure - South Africa, 2015

Developing inorganic inks for printable electronics

Prof. M. Luscombe, University of Washington, USA
iThemba LABS, Faure - South Africa, 2015

The AFM Probe - Fundamentals, Selection, and Applications

WITEC Webinar Series, 2013
iThemba LABS, Faure - South Africa, UNISA Florida/Johannesburg - South Africa, 2015

Super-resolution Microscopy and its Applications in Fast and Complex Biological Systems

BRUKER Fluorescence Microscopy Webinar Series, 2014
iThemba LABS, Faure - South Africa, UNISA Florida/Johannesburg - South Africa, 2015

Accelerating Excellence of Science in Africa (AES)

African Academy of Science, 13-16 September 2015, Nairobi-Kenya

Bioremediation of soil and water polluted by cyanide

Hammamet - Tunisia, 2016

Multifunctional nano-scaled VO₂ based oxides for Green Air Conditioning & ultrafast optoelectronics

Nano-Iran - Iran Nanotechnology Initiative / IROST, 7-10 March 2016, Kish Island - Iran

Select Synthesis of Platinum nanoparticles by Gamma Radiolysis

T. Cele

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Comparative study of flat and cylindrically-shaped selective solar absorber for CSP application

J.G. Mallett

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Nanostructured Characterization of Papilio demoleus Linnaeus Butterfly Wings

J. Sackey

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Bio-synthesis of BiVO₄ Nanorods Using Extracts of Callistemon viminalis

H.E.A. Mohamed

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Neutron tunneling in nanostructured systems: isotopic effect

A. Matiwane

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Wettability Property In Natural Systems: A Case of Flying Insects

J. Sackey

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Resonant photoemission spectroscopy of gamma irradiated VO₂ films

I.G. Madiba

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Laser-Induced Breakdown Spectroscopy (LIBS) on Geological Samples: Compositional Differentiation

S.N. Panya Panya

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

Biosynthesis of ZnO Nanoparticles by Adansonia Digitata Leaves Dye Extract: Structural & Physical Properties

A.O. Kane

African Materials Research Society 2017, 10-16 December 2017, BITRI-Gaborone - Botswana

On the foot steps of Giants: Nanosciences African Network & UNESCO-UNISA Africa Chair in Nano

ICTP East Africa Institute for Fundamental Research, 17-20 November 2018, Kigali - France

Nanosciences & Nanotechnologies: A Multidisciplinary Approach for a sustainable Inclusive Future for Humanity

6-10 November 2018

City University of Hong-Kong, City of Hong Kong, City State of Hong-Kong XVII. SE

Electron and ion irradiation induced structural changes in ZnO nanowires

I. Ahmad

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Biosynthesis and Characterization of Silver Nanoparticles encapsulated with Utazi (Gongronemalatifolium): Antibacterial activities

S.O. Aisida

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Different Architecture of Nanoshaped (flower-rod wire-like) structures from Transition-Metal Doped ZnO Thin Films for Enhanced Electronic Properties

E. Manikandan

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Gamma irradiation-induced phase transitions of boron nitride nanoparticles

Hamdullah

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Electrochemical studies of CuMoO₄ nanoparticles modified novel electrode for super capacitor applications

A. Manikandan

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Photodegradation of Fuchsin Magenta Basic (FMB) Dye by VO₂ (M) Nanorods

A. Simo

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Electron Beam Deposition of Sandwich-Structured V₂O₅/M/V₂O₅ Multilayers for High Thermo-chromic VO₂ Thin Films

B.S. Khanyile

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Different Architecture of Nanoshaped (flower-rod wire-like) structures from Transition-Metal Doped ZnO Thin Films for Enhanced Electronic Properties

E. Manikandan

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

The use of medicinal plants in developing nanomedicine for treatment of breast cancer

M.P Sekhoacha

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Simulation, Processing and Characterization of Al₂O₃/Zr/ Al₂O₃ Selective Solar Absorber for Solar Thermal Application

S.A. Abdullahi

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Efficiency enhancement in P3HT:PCBM blends using Squarylium III dye: M. Tembo

Review for Bio-inspired Nanoscaled Technologies Application for Treating Heavy Metals Removal in Waste Water Mining Industry

L.C. Razanamahandry

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

From Bioremediation to Nanotechnology for Treating Heavy-Metals Removal in Mining Waste-Water Assessment

L.C. Razanamahandry

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Comprehensive analysis of retro-reflection in Papilio crino Fabricius, 1792 wings

K.A. Dompok

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Structural and Optical Properties of Transparent Wing of Dragonfly

K.A. Dompok

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Pb-Sn binary perovskite solar cells by chemical vapor deposition

F.L. Mabila

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Green Synthesis of Nanostructured CuAl₂O₄ via natural extracts of Hiscus Rosa Sinensis: Structural, Mechanism of formation, Electrochemical, properties

N. Mayedwa

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

A green approach of bismuth iron oxide nanocomposites using Moringa oleifera natural extract for high energy super-capacitive nanomaterial

N. Matinise

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Structural, Optical and Electrochemical properties of Ternary ZnCdO nano powder synthesized by green natural extracts of Hibiscus Rosa Sinensis

N. Mayedwa

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Biosynthesis of α-Cr₂O₃ nanoparticles via Hyphaena thebaica extract and their photocatalytic application

H.E.A. Mohamed

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Green Synthesis of Ag Nanoparticles from aqueous extracts of Avocado Seeds and Studying the Effects of Different Parameters on the Dynamics of the Process

M.H. Javed

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Gamma Radiolysis Assisted Deposition of Metallic and Metal Oxide Nanoparticles on Nickel Foam for Solar Energy Conversion Applications

M. Mavundla

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Nano-rod-like Na_{0.44}MnO₂ as cathode material for aqueous sodium ion battery

A.C. Nwanya

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Stability and thermal conductivity of CuO nanowire for catalytic applications

K. Noluthando

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Laser-Induced Breakdown Spectroscopy (LIBS) on Geological Samples: Relative Hardness Quantification

S.N. Panya panya

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Synthesis of Rhodium Nanoparticles by Gamma radiolysis

T. Cele

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Ultrafast Laser Ablation Assisted Fabrication of Silver Nanoparticles in Ethylene Glycol Based Nanofuild

T. Khamliche

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

The effects of the bottom layer thickness on structural and the optical properties of the VO₂ thin films deposited by electron beam evaporation

B.S. Khanyile

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Environmental Performance of Oxygen-Rich pure TiO₂ Nanoparticles as Solar-Light Driven Photocatalysts of Methyl Orange and Methylene Blue

K. Kaviyarasu

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Fabrication of Au nanoparticles decorated graphene nanosheets based nanofluid by Pulsed Laser Ablation in Ethylene Glycol

C.M. Makhangela

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

A new Pt-Al₂O₃ double Cermet Selective Solar Absorber Coating

Z.Y. Nuru

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Green Synthesis of ZnO doped Moringa oleifera extract and their biomedical applications

D. Letsholathebe

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Effects of neutron irradiations on reactive PLD deposited vanadium dioxide thin films

I.G. Madiba

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Deep-space radiations like hardness of VO₂ based active smart radiation device for nano-satellites applications

I.G. Madiba

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Proton-induced secondary electron emission for elemental solid targets (Zt=3-83)

A.K.F. Haque

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Electron-induced secondary electron emission from elemental solid targets

A.K.F. Haque

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Thermal Valorisation Extracts of Selected Agro-waste for Antibacterial NiO nanoparticles synthesis

L.C. Razanamahandry

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

The Use of Nickel Oxide as a Hole Transport Material in Perovskite Solar Cells

A.C. Nkele

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Synthesis of Graphene nanoplatelets using various indigenous plant extracts from Madagascar

H. Andrianiaina

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Carbon, Magnesium and Helium ion implantation on pulsed laser deposited thermochromic thin film of VO₂

B.M. Mabakachaba

NANOSMAT AFRICA 2018, 19-23 November 2018, Lord Charles Hotel, Somerset West - South Africa

Sandwich Structure VO₂ Thin Films Based Smart Window Coatings with Improved Thermochromic Functionality

A. Simo

4th US International Conference on Surfaces, Coatings and Nanostructured Materials: 29 October - 1 November 2018 at Padre Island Texas, USA

13. International Visiting Junior and Senior Scientists

Prof. M. Rochdi

Universite de La Reunion
La Reunion - France, 2014

Prof. E. Park

Nelson Mandela African Institute of Science & Technology
Arusha - Tanzania, 2014

Dr. E. Machunda

Nelson Mandela African Institute of Science & Technology
Arusha - Tanzania, 2014

Prof. I. Changshu

Tsinghua University
Tapei - Taiwan, 2014

Prof. T.H. Feurer

University of Berne
Bern - Switzerland, 2014

Prof. C. Luscombe

Washington University
Washington - USA, 2014

Dr. T. Bole

International Organization of Women in Science
Trieste - Italy, 2014

Dr. F. Marchetti

Head of Cooperation, French Embassy in Pretoria
Pretoria - South Africa, 2014

Dr. P. Lemonde

Scientific Attache, French Embassy in Pretoria
Pretoria - South Africa, 2014

Prof. S. Berthier

University of Pierre-Marie Curie
Paris - France, 2014

Prof. F. Ezema

Physics Dept., University Nsukka Nigeria
Abuja - Nigeria, 2014, 2015

Dr. B.D. Ngom

Physics Dept., Cheikh Anta Diop University
Dakar - Senegal, 2014, 2015

Prof. A.C. Hacque

Department of Physics, University of Rajshahi
Rajshahi - Bangladesh, 2015

Prof. B. Aissa

INRS, University of Montreal
Montreal - Canada, 2015

Prof. A. Gibaud

Universite du Maine
Le Mans - France, 2014-2015

Dr. T.H. Beuvier

Universite du Maine
Le Mans - France, 2015

Prof. I. Iqbal

National Physics Centre,
Islamabad - Pakistan, 2015

Dr. E. Manikandan

Central Research Laboratory, Sree Balaji Medical College & Hospital, Bharath University
Chennai - India, 2015

Dr. K. Kaviyarasu

St Xavier College,
Tamil Nadu - India, 2015

Prof. J.M. Greneche

Universite du Maine
Le Mans - France, 2015

Prof. J. Kennedy

GNS-Centre
Wellington - New Zealand, 2015

Prof. M. Henini

University of Nottingham
Nottingham - UK, 2015

Prof. M. Harith

University of Cairo
Cairo - Egypt, 2015

Prof. M. Chaker

INRS-Motreal
Montreal - Canada, 2016

Prof. F. Rosei

INRS-Motreal
Montreal - Canada, 2016

Prof. M. Telmini

University of El Manar
Tunisi - Tunisia, 2016

Prof. A. Guizani

CRTEN-RNRT
Tunisi - Tunisia, 2016

Prof. B. Moncef

CRTEN-RNRT
Tunisi - Tunisia, 2016

Prof. A. Guizani

CRTEN-RNRT
Tunisi - Tunisia, 2016

Prof. W. Dimmassi

CRTEN-RNRT
Tunisi - Tunisia, 2016

Dr. A. Abdesllam

CRTEN-RNRT
Tunis - Tunisia, 2016

Prof. B.D. Ngom

Cheikh Anta-SDiop of Dakar
Dakar - Senegal, 2016

Prof. H. Amara

CDTA- Baba Hassan Centre
Algier - Algeria, 2016

Mr. D. Letshoabe

University of Botswana
Gaborone - Botswana, 2016

Prof. F. Hacque

University of Dhaka
Dhaka - Bangladesh, 2017

Prof. I. Iqbal

NCP-Pakistan
Islamabad - Pakistan, 2017

Ms. F. Fariza

University of Tizi-Ouzou-Mouloud Mammeri
Tizi-Orou - Algeria, 2017

Ms. M. Achouri

University of Oran
Oran-Algeria, 2017

Ms. A. Benkhelifa

University of El Manar-Tunis
Tunis - Tunisia, 2017

Prof. S. Scandolo

Abdus Salam-ICTP
Trieste - Italy, 2017

Prof. J. M. Lehn

Nobel Laureate, University of Strasbourg
Strasbourg - France, 2017

Prof. C.N.R. Rao

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)
Bangalore - India, 2018

Prof. I. Polykarpov

University of Sao-Paulo
SaoPaulo - Brazil, 2018

Prof. F. Rosei

INRS & University of Montreal
Montreal-Canada, 2018

Prof. A. Braun

EMPA
Zurich - Switzerland, 2018

Prof. H. Hormozi-Nezhad

Sharif University,
Tehran - Iran, 2018

Prof. R. Sbiaa

University of Muscat
Muscat - Oman, 2018

Prof. A. Bhaw-Luximon

University of Mauritius
Moka - Mauritius, 2018

Prof. A. Gibaud

University of Le Maine
Le Mans - France, 2018

Prof. I. Ahmad

National Centre for Physics
Islamabad - Pakistan, 2018

Prof. A. Bellaouchou

University of Rabat
Rabat - Morocco, 2018

Prof. H.U. Habbermeir

Max-Planck-Institute for Solid State Research
Bonn - Germany, 2018

Prof. D. Cahen

Weizmann Institute of Science
Rehovot/Tel Aviv- Israel, 2018

Dr. E. Ramforth

Springer-Nature Publishing
Bonn - Germany, 2018

Prof. K.H. Bouziane

International University of Rabat (IUR)
Rabat - Morocco, 2018

Prof. J. Boucle

XILM-CNRS, University of Limoge
Limoge - France, 2018

Prof. Z. Sekkat

University of Rabat & MASCIR
Rabat - Morocco, 2018

Prof. R.B. Benmokhtar

Academy Hassan II
Rabat - Morocco, 2018

Dr. T. Thema

Botswana Institute for Technology Research & Innovation (BITRI)
Gaborone - Botswana, 2018

Prof. U. Landmann

GeorgiaTech
Atlanta - USA, 2018

Prof. A. Mszane

Clark Atlanta University (CAU)
Atlanta - USA, 2018

Prof. M. Almarsi

University of Marrakech
Marrakech - Morocco, 2018

Prof. P. Esquinazi

University of Leipzig
Leipzig - Germany, 2018

Prof. N. Kucerka

Frank Laboratory for Neutron Physics
Dubna - Russia, 2018

Dr. Sh. Eaton

Istituto di Fotonica e Nanotecnologie (IFN-CNR)
Milano - Italy, 2018

Prof. R. Ramponi

Istituto di Fotonica e Nanotecnologie (IFN-CNR)
Milano - Italy, 2018

Dr. A. Solangi

University of Sindh-Jamshoro
Jamshoro - Pakistan, 2018

Prof. R. Naaman

Weizmann Institute of Science
Rehovot/Tel Aviv- Israel, 2018

Prof. H. Hery Andrianiana

Institut Nati. Techniques Nucleaires
Antananarivo - Madagascar, 2018

Prof. A.K. Tyagi

Bhabha Atomic Research Centre (BARC)
Mumbai - India, 2018

Prof. A. Gibaud

University of Le Maine
Le Mans - France, 2018

Dr. D. Dilawar-Hassan

University of Islamabad
Islam Abad - Pakistan, 2018

Prof. I. Issakha Youm

University of Cheikh Anta Diop
Dakar - Senegal, 2018

Prof. F. Rosei

INRS-Motreal
Montreal - Canada, 2018

Mr. M. Tembo

National University of Zambia
Lusaka - Zambia, 2018

Prof. M. Chaker

Montreal - Canada, 2018

Prof. H. Swai

N.M. African Institute for S&T
Arusha - Tanzania, 2018

Prof. W. Kook-Shoi

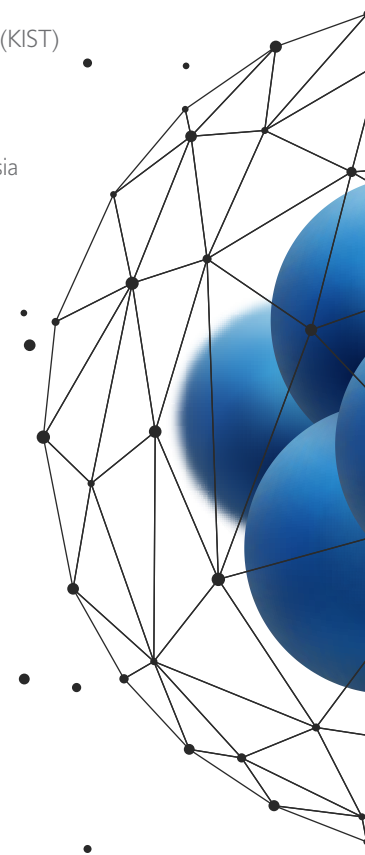
Korea Institute for Science & Technology (KIST)
Seoul - South Korea, 2018

Prof. M. Zghal

Ministry of Science & Technology of Tunisia
Tunis - Tunisia, 2018

Prof. M. Samiji

Dar Essalam University
Dar Salam - Tanzania, 2018



14. Know-How Transfer and Advanced Trainings

Prof. M. Maaza (Chair U2ACN2)

National Centre for Physics (26-29 Aug. 2015)
Islamabad - Pakistan, 2015

Prof. M. Maaza (Chair U2ACN2 & UNISA Delegation)

Abdus Salam ICTP, International Organization of Women in Science OWSDW, Academy of Science for the Developing World TWAS (18-21 April 2015)
Trieste - Italy, 2015

Prof. M. Maaza (Chair U2ACN2 & UNISA Delegation)

UN Non-Aligned Movement Centre for Science & Technology NAM S&T, Bhrathi Vidyapeeth University BVUP & Pune University SPPU (22-24 April 2015)
New Delhi & Pune - India, 2015

Prof. M. Maaza (Chair U2ACN2 & UNISA Delegation)

China National Nanotechnology Centre NCN-Beijing, & Int. Renewable Energy Centre, Xi'an University (27-29 April 2015)
Beijing & Xi'an - China, 2015

Mrs. N.E. Ihegwuagu

Agricultural Research Council of Nigeria, CTRP, Agricultural Research House
Abuja - Nigeria, 2014

Mr. G. Gaumann

University of Berne
Bern - Switzerland, 2014

Ms. F. Ferhati

Universite Mouloud Mammeri de Tizi Ouzou
Tizi Ouzou - Algeria, 2014 & 2015

Ms. S. Honey

Quaid-I-Azzam University & National Centre for Physics
Islamabad - Pakistan, 2014 & 2015

Mr. K. Kaviyarasu

St Xavier College
Tamil Nadu - India, 2014 & 2015

Mr. G. Gaumann

University of Berne
Bern - Switzerland, 2014

Mr. A. Benali

International University of Rabat
Rabat - Morocco, 2015

Mr. O. Bajjou

Universite Dhar El Mehrez
Fez - Morocco, 2015

Ms. M. Achouri

Univ. Sciences & Technologie d'Oran
Oran - Algeria, 2015

Mr. G.B. Ytayew

Univ. of South Africa, Addis Campus
Addis Ababa - Ethiopia, 2015

Mr. A.B. Habtemariam

University of South Africa, Addis Campus
Addis Ababa - Ethiopia, 2015

Dr. Z. Nuru (Postdoctoral Fellow U2ACN2)

Dept. Physics & Astronomy, Leuven Katoliek Univ.
Leuven - Belgium, 2014

Ms. N. Numan (Doctoral U2ACN2)

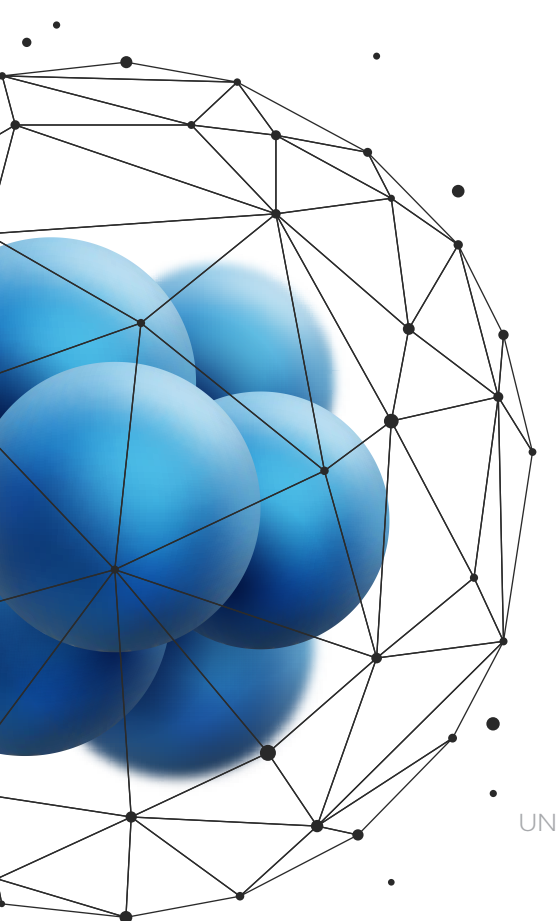
Ultrafast Specroscopy Laboratories, Univ. of Bern
Bern - Switzerland, 2014

Dr. C.L. Kotsedi (Doctoral Fellow U2ACN2)

Department of Physics, Photonics Centre, Politecnico di Milano
Milano - Italy, 2014 & 2015, 2017 & 2018

Mrs. T. Cele (Doctoral Fellow U2ACN2)

Physics Dept, University of Le Maine
Le Mans - France, 2016





Dr. J. Sackey (Doctoral Fellow U2ACN2)

Laboratoire d'Optique & Photonique, University of Pierre-Marie Curie
Paris - France, 2016

Mrs. J. Sackey (Doctoral Fellow U2ACN2)

Physics Dept, University of Le Maine
Le Mans - France, 2016

Mr. I. Madiba (Doctoral Fellow U2ACN2)

Joint Institute for Nuclear Research (JINR) SA-JINR Russia Programme
Dubna - Russia, 2017

Mr. A. Mathiwane (Master Fellow U2ACN2)

Joint Institute for Nuclear Research (JINR) SA-JINR Russia Programme
Dubna - Russia, 2017

Dr. B. Sone (Postdoctoral Fellow U2ACN2)

Physics Department, University of the Free State (UFS)
Free State - South Africa, 2017

Mr. A. Diallo (Doctoral Fellow U2ACN2)

Indian Institute of Technology (IIT) Madras NAM S&T Programme
Madras - India, 2017

Mr. S. Zongo (Doctoral Fellow U2ACN2)

Indian Institute of Technology IIT_Madras "NAM S& T Programme
Madras - India, 2017

Dr. N. Thovhogi (Postdoctoral Fellow U2ACN2)

Indian Institute of Technology (IIT) Madras NAM S&T Programme
Madras - India, 2017

Ms. N. Panya Panya (Master Fellow U2ACN2)

National Institute for Laser Enhanced Sciences (NILES)
Cairo - Egypt, 2018

Ms. T. Khamliche & Mr. M. Makhangela (Master Fellows U2ACN2)

Physics Dept. University of Kwazulu Natal
Kwa Zulu-Natal - South Africa, 2018

Dr. Z. Nuru (Postdoctoral Fellow U2ACN2)

Physics Dept, University of Alberta
Alberta - Canada, 2018

Dr. A. Simo (Postdoctoral Fellow U2ACN2)

Centre for Renewable Energies, Xi'ang University
Xi'ang - China, 2018

Ms. B. Makachbacha (Master Fellow U2ACN2)

Atomic Force Microscopy Laboratory, Department of Engineering,
Stellenbosch University
Stellenbosch - South Africa, 2018

15. Major Organised International Conferences & Workshops

The following events were organised with a significant sponsorship from UNISA, Swiss Embassy, DST, NRF, and the Abdus Salam ICTP.

1st Swiss-South Africa Workshop on Nanosciences & Nanotechnology

14-15 April 2014, South Africa
(90 Participants)

Synchrotron Radiations Techniques & Nanotechnology: A Synergic Approach to Life Science Medicine, and materials

11-22 November 2013, Somerset West - South Africa

Regional Abdus Salam ICTP Workshop on Materials for Solar Energy

3-8 November 2013, South Africa

School on Cooperative Phenomena in CM: From BE Condensates to Quantum Optics

17-28 November 2014, University of Buea, Cameroon
(470 Participants)

Energy Postgraduate Conference

11-14 Aug. 2013, Faure - South Africa
(80 Participants)

India-Brazil-South Africa (IBSA) Nano-Workshop: 2014

Faure - South Africa
(180 Participants)

Regional African Materials Research Society: 2014

Faure - South Africa
(140 Participants)

African Laser Centre Annual Workshop: 2014

Faure - South Africa
(230 Participants)

DST-NRF Algeria-South Africa Coop. Program: 2015

Faure - South Africa
(60 Participants)

NANOSMAT Africa 2018

19-23 December 2018



16. Market/Job Absorption of the Trained Graduates

While several postgraduates choose to further their academic career towards PhD and postdoctoral experiences respectively, others prefer to embark for early career and hence absorbed by the job market in competitive sectors. Among those who have chosen to enter the job market are:

Mr. A. Mathiwane (MSC Fellow U2ACN2)

Junior Scientist & Operator: Radio-isotopes & Radiopharmaceutical Division, iThemba LABS-NRF

Mrs. A. Genu (MSC Fellow U2ACN2)

Operator: Radiobiology & RadioPhysics Division, iThemba LABS-NRF

Mr. Kenneth Nukwa (MSC Fellow U2ACN2)

Division Manager, NAMPACK-South Africa

Mrs. T. Madima-Cele (PhD Fellow U2ACN2)

Deputy Director, Dept. Trade & Industry

Mrs. N. Ntshangase-Kana (PhD Fellow U2ACN2)

Managing Director, Koeberg Nuclear Station-ESKOM

Mr. S. Zongo (PhD Fellow U2ACN2)

Senior Lecturer, University of Ouagadougou 1

Mr. B.D. Ngom (Postdoctoral Fellow U2ACN2)

Senior Lecturer, University of Cheikh Anta Diop of Senegal-UCAD

Mrs. Z. Nuru (Postdoctoral Fellow U2ACN2)

Senior Lecturer, Birhan Dar University.

Dr. G. Fuku (Postdoctoral Fellow U2ACN2)

Scientist Council for Scientific & Industrial Research-CSIR

Dr. Chester Lebogang Kotsedi (Postdoctoral Fellow U2ACN2)

Junior Scientist, iThemba LABS-NRF

Dr. Nthevhe Thovhogi. (Postdoctoral fellow U2ACN2)

Scientist, Medical Research Council (MRC)

Dr. P. Zamora-Rodriguez (Postdoctoral Fellow U2ACN2)

Senior Lecturer, UNAM-Mexico

Dr. I. Tadadjeu-Sokeng (Doctoral fellow U2ACN2)

In Charge of Deep Space Radiations testing at FSAT-CPUT, South Africa

17. International Visiting Scientists

Prof. A. Kulshreshta

Director General
Non Aligned Movement Centre for Science & Technology (NAM S&T)
New Delhi - India

Dr. I. Iqbal

Head
Accelerator group, National Centre for Physics (NCP-Pakistan)
INCP-Islamabad - Pakistan

Dr. J.V. Kennedy

Principal Scientist, Environment and Materials Division, (GNS-New Zealand)
Science Leader, Ion Beam Applications
National Isotope Centre, GNS Science
GNS-Lower Hutt - New Zealand

Prof. L. Vayssieres

Director, International Research
Center for Renewable Energy (IRCRC-China)
State Key Laboratory of Multiphase Flow in Power Engineering
School of Energy & Power Engineering, Xi'an Jiaotong University
Xi'an (Shaanxi Province) - P.R. China

Prof. E. Manikandan

Central Research Laboratory (CRL Bharat University -India)
Sree Balaji Medical College & Hospital, Bharath University
Tamil Nadu - India

Prof. T.H. Feurer

Group Head
Institute of Applied Physics: Laser Physics Group (IAP-Switzerland)
University of Bern
Bern - Switzerland

Dr. V. Rajendran

Centre for Nano Science and Technology (KSR-India)
Director, Research and Development
K S R Group of Institutions
K S R Kalvi Nagar, Tiruchengode
Tamil Nadu - India

Prof. A. Guizani

Centre des Recherches et des Technologies de l'Energie
Technopole: (CRTET-Tunisia)
Borj Cedria, CRTET-Tunisie
CRTET Hammam Lif - Tunisia

Prof. A.F. Hacque

Nuclear Physics Group, Physics Department,
University of Rajshahi,
Rajshahi - Bangladesh

Prof. A. Vinu

Professor of Nanomaterials
Future Industries Institute (FII-australia)
Division of Information Technology,
Engineering and the Environment, University of South Australia
South Australia – Australia

Prof. N.M. Butt

Professor of Nanomaterials & Rector
IPreston University
Islamabad - Pakistan

Prof. F. Rosei

Materials & Technologies for Energy Conversion, Saving & Storage
(MATECSS)
Montreal - Canada

Prof. A. Gibaud & Prof. J.M. Greneche

Groupe Surfaces & Interfaces & Magnetisme
University of Le Maine
Le Mans - France

Prof. L. Casalis

Biophysics Group
ELETTRA Sincrotrone, Trieste
Trieste - Italy

R.A. Braun

Laboratory for High Performance Ceramics
Empa - Swiss Federal Laboratories for Materials Science and
Technology
Zurich - Switzerland

Prof. L. Casalis

Biophysics Group
ELETTRA Sincrotrone, Trieste
Trieste - Italy

Prof. A.K. Tyagi

Advanced Materials Division, Bhabha Atomic Research Centre
(BARC)
Monbay - India

Dr. V. Bodnarchuck and Dr. N. Kucerka

Frank Neutron Laboratory Physics, Joint Nuclear Research Centre (FLNP-JINR)
Dubna - Russia

Prof. R. Sbiaa

Magnetism & Advanced Magnetic Materials, Physics Department, Sultan Quaboos University
Muscat - Oman

Prof. P. Esquinazi

Defect Induced magnetism in non-magnetic materials, Max Planck Institute of Leipzig
Leipzig - Germany

Prof. V. Polykarpov

Biocologia molecular e biologia estrutural, Sao-Paulo University
Sao Pulo - Brazil

Dr. H.U. Habbermeir

Max Planck Institute of Solid State Research, Munich
Munich - Germany

Prof. M. Henini

Nottingham Nanocentre, School of Physics and Astronomy, University of Nottingham
Nottingham - UK

Prof. C.N.R. Rao

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)
Bangalore - India

Prof. U. Landmann and Prof. A. Msezane

Computational Materials Science, Georgia Tech (GATECH)
Atlanta - USA

Dr. M. Heather

Africa Germany Network for Scientific Excellence (AGNES)
South Africa and Bonn - Germany

18. Community Engagement Activities

In line with its Vision & Mission, the U2ACN2 has embarked in 2 community engagement activities; namely:

- (i) "Adopt a learner flagship project" with the South African Agency for Science & Technology Advancement (SAASTA), and
 - (ii) "Girls in Science and Technology" in line with the I'OREAL-UNESCO model.
- Within the "Adopt a learner flagship project", 3 adopted learners from the Eastern Cape province:
 - P. Theron (Grade 10, Focused High School, EC),
 - R. Faltein (Grade 11, Mosa Sibi Senior Secondary School, EC),
 - N. Ramabele (their teacher, Dept. Education, Maluti District),
 - 34th Beijing Youth Science Creation Competition 27-30/3/2014, Beijing Technology and Business University Liangxiang campus, Fangshan district.
 - Adopted learners spent 2 intense weeks with U2ACN2 & Teacher Ramabele working on a project titled "Atmospheric power pilot-plant for out of grid rural areas". They have finalized a lab prototype & a concise large poster presentation of a such a device aiming to harvest lightning as energy source.
 - Winner Silver award/ 2nd Prize
 - Africa representative/30 000 applicants/3000 selected/300 competitors



19. Science Engagement with Policy-Makers

- Within the International Year of Light-2017, an initiative to lobby for STI in Africa towards the the Policy Makers in different African governments & Ministries as well as in various African Union agencies, was implemented under the auspices of the African Academy of Sciences (AAS) by the UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology (U2ACN2). The “Ishango bone Oddysey” was implemented. **This consisted of duplicating Ishango bone by CO2 laser engraving in large glass slide as an optical transparent medium.**
- Dating as far back as 22000 years ago, in the Upper Paleolithic era, the Ishango bone is a dark brown bone which happens to be the fibula of a baboon, with a sharp piece of quartz affixed to one end for engraving. **It is the oldest attestation of the practice of arithmetic in human history.** The Belgian geologist Jean de Heinzelin de Braucourt uncovered the bone buried in layers of volcanic ashes on the shores of Lake Edward in the Ishango region in DRC, near the border with Uganda. The Ishango bones are actually two (2) bones of baboon, 10 to 14 cm long, with several incisions on each faces. The smallest of the two bones was the first to be exposed at the Royal Belgian Institute of Natural Sciences in Brussels; it carries several incisions organized in groups of three columns. The left column can be divided in 4 groups, with each group possessing 19, 17, 13, and 11 notches. The sum of these being 60. Those are the 4 successive prime numbers between 10 and 20. This constitutes a quad of prime numbers.
- The “**Ishango bone Oddysey**” was implemented in line with Accelerating Excellence in Science in Africa (AESIA): international DELTAS and Grand Challenges Programs held on 10th 09-2015, in Nairobi-Kenya. Driven by the African Academy of Sciences (AAS) and NEPAD, BMGF, Wellcome Trust (WT), and the UK-DFID.
- This “**Ishango bone Oddysey**” was launched in the presence of numerous African policy makers including The 6th President of the Republic of Mauritius & several international Funding agencies hence allowing a large continental & global marketing visibility while positioning itself within the AU STI landscape. Its launch offered an opportunity to lobby for STI within African and global science leaders, policy and decision makers, industry and non-governmental organizations.

United Kingdom (3):

These pieces express excitement over the launch of AESIA, and discuss the role African-led innovation can play in the continent's fight against deadly diseases like malaria, Ebola and HIV/AIDS.

- BBC News: African science research fund launched by AESIA (10 September, [Link](#))
 - Cross-posted in BBC News Swahili ([Link](#)).
 - BBC Africa Soundcloud: Funding African Research (10 September, [Link](#)).
 - BBC: ([Link](#))
- The Guardian: Socking it to malaria just the start for Africa's new science alliance (Murithi Mutiga, 10 September, [Link](#)).
 - Featured in the Kaiser Family Foundation Daily Global Health Policy Report (11 September, [Link](#)).
- Thomas Reuters Foundation: African scientists funded to seek cures for AIDS, Ebola at home (Katy Migiro, 10 September, [Link](#)).
 - Cross-posted in Yahoo News ([Link](#)).
 - Cross-posted in Pulse (Nigeria, [Link](#)).
 - Cross-posted in News24 Nigeria ([Link](#)).
 - Cross-posted in Daily Mail (UK, [Link](#)).
 - Cross-posted in London South East (UK, [Link](#)).
 - Cross-posted in Citizen (Kenya, [Link](#)).
 - Cross-posted in News24 (Kenya, [Link](#)).
 - Cross-posted in AfricaBriefing ([Link](#)).
 - Cross-posted in Polity.org.za (South Africa, [Link](#)).
 - Cross-posted in News24 Zimbabwe ([Link](#)).
 - Cross-posted in AllAfrica.com ([Link](#)).

China (2):

An article by the Xinhua News Agency (published by Global Post) focuses on China's ongoing contributions to advancing scientific research in Africa, flagging Sino-African scientific collaboration as a key topic at both this event and the upcoming Grand Challenges Annual Meeting in Beijing.

- Xinhua News Agency: Sino-Africa scientific cooperation on the right track: officials (reposted in Global Post, 10 Sept., [Link](#)).
- CCTV: Mauritius President launches initiative to build continents scientific capacity (13 September, [Link](#))

Africa (6):

- Africa Review: \$5m Africa health research fund to be unveiled (2 September, [Link](#)).
- Science Africa: Launching Alliance for Accelerating Excellence in Science in Africa (10 Sept)
- University World News: Alliance for accelerating science excellence launched (12 Sept.)

Ghana (2):

- Ghana Broadcasting Corporation: AESA Launches African Science Research Fund in Kenya (11 September, [Link](#)).
- MyGhanaonline: AESA Launches African Science Research Fund in Kenya (11 September)

Kenya (2):

- The Star: African scientists launch research hub in Nairobi (John Muchangi, 12 September)
- Coastweek: More effort needed to boost science application: Kenya minister (Xinhua, [Link](#))
- The Standard: African scientists get Sh7b boost for research (Joy Muraya, 12 September,

**South Africa (2):**

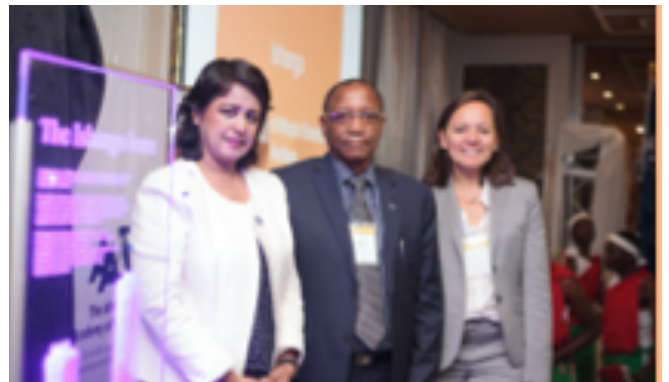
- Health24: SA universities share in million-rand research pot (Fathima Simjee, 10 September, [Link](#)).
- Bizcommunity: Alliance for Accelerating Excellence in Science in Africa launches in Kenya (14 September, [Link](#))

**Tanzania (1):**

- Daily News: NIMR hails initiative to spur scientific research (Orton Kishekwo, 13 September,

Zimbabwe (2):

- The Herald: Fund scientific research projects, Africa urged (Roselyne Sachiti, 11 September, - Cross-posted in Zimbabwe Daily ([Link](#)).
- News Day: Africa's scientific research gets shot in the arm (12 September, [Link](#))

**Partner Content (4):**

- African Academy of Sciences: AAS and partners to launch AESA, the funding platform for research.
- Wellcome Trust: Leading African scientists to drive continent's research agenda (10 September, [Link](#)).
- LHSTM: Leading African scientists partner with School researchers to drive continent's research agenda



20. Fund-Raising and Fund-Matching

Excluding the publication incentive fund from iThemba LABS-NRF & DHET-UNISA, several fundings were generated within the period 2013-2018 via various bilaterals & grants from the Trieste system & German Funding Agencies such as DAAD & DGF. Among such generated funds, one could mention the followings:

UNESCO UNISA Africa Chair in Nanosciences & Nanotechnology, Pretoria - South Africa

2014: ~1,500,000.00R
2015: ~1,500,000.00R
2016: ~1,500,000.00R
2017: ~1,500,000.00R
2018: ~1,500,000.00R

Academy of Science for the Developing World TWAS-UNISA-iTL agreement

2014-2018: ~135,000.00R

Dr. F. Hacque - Bangladesh, Dr. A. Ishaq - Pakistan

International Organisation of Women in Science OWSDW-UNISA-iTL agreement

2014-2015: ~324,000.00R

Ms. J. Sackey, PhD - Ghana

Ms. N. Numan, PhD - Sudan

Ms. H. Niragire, MSc - Rwanda

Ms. A. Mboniyivuze - Rwanda

DAAD-German Government Cooperation Agency

2014-2015: ~400,000.00R

Ms. A. Karoro, PhD - Uganda

Mr. S. Zongo, PhD - Burkina Faso

2017-2018: ~500,000.00

Ms. R. Akoba, PhD - Uganda

Mr. I. Ngom, PhD - Senegal

Mr. M. Bakayoko, PhD - Ivory coast

DST-NRF block grant scholarships

2015 (for 2016-18): ~2,500,000.00R

Postdoctorals SANHARP Programme

2015 (for 2016): ~255,000.00R

MSCs Renewable & Sustainable Energy Programme

2015 (for 2016): ~600,000.00R

Doctorals SANHARP Programme

French Embassy/Scientific & cooperation directorate

2014-15: ~150,000.00R

France + programme

Libyan Embassy/Cooperation directorate

2014-15: ~400,000.00R

Postgraduate fellowships programme

African Laser Centre (ALC)

2014: ~350,000.00R

7th ALC Workshop, Rabat - Morocco

2015: ~150,000.00R

ALC PhD Fellowship + UN International Year of Light

2017-2018 ~1,700,000.00

NLC-RPP

National Research Foundation of South Africa (NRF)

2014-15: ~400,000.00R

Postdoctoral: Freestanding - Nanotechnology programme

2014-15: ~300,000.00R

Doctoral: Freestanding - Nanotechnology programme

2014-15: ~120,000.00R

DST Innovation Master's Scholarships

University of South Africa Postdoctoral programme

2014-15: ~1,500,000.00R

UNISA Research Directorate postdoctoral programme

Fundraising
Internal/External
Total:
R 17,439,000.00

Swiss-South Africa bilateral cooperation

2014-15: ~430,000.00R

With the University of Bern

Tanzania - South Africa bilateral cooperation

2014-15: ~300,000.00R

With the Nelson Mandela African University of Science & Technology

Tunisia - South Africa bilateral cooperation

2014-15: ~350,000.00R

With the Research and Technology Centre of Energy, CRTEn

Oman-South Africa bilateral cooperation

2014-15: ~250,000.00R

With the Manetism research group, Phys. Dept-Sultan Quaboos University, Oman

Iran - South Africa bilateral cooperation

2014-15: ~250,000.00R

With the Iran-Nanocentre, Sharif University, Iran

NANOSMAT-AFRICA-2018 International Conference

2017-2018:1,100,000.00R

Fund raised from DST-NRF, ICTP & UNISA

DAAD - German Government Cooperation Agency

2017-2019: ~830,000.00R

Ms. R. Akoba - Uganda

Mr. D. Kpeglo - Ghana

Mr. G. Giday - Ethiopia

Mr. M. Bakayoko -Ivory coast

Mr. I. Ngom -Senegal

TOTAL: 17,439,000.00R

21. Strategic Long-Term Initiatives

In line with the long term vision of the U2ACN2 in terms of the creation of an ISI-SCI African Nanosciences “Nano-Horizons” with Springer-Nature, the U2ACN2 has been associated in the implementation of the an ISI-SCI journal with Elsevier (while the discussion are still ongoing with Springer-Nature Publishing); the Scientific African Journal. The Chair is a member of the Editorial board Physical Sciences section. As below is the copy of the 1st publication of the U2ACN2 in the Scientific African Journal.



Major Sponsors and Acknowledgments

United Nations Educational, Scientific & Cultural Organisation (UNESCO)

UNESCO / Paris - France

United Nations Non Aligned Movement Centre for Science & Technology (NAM S&T)

NAM S&T / New Delhi - India

Department of Science & Technology of South Africa (DST)

DST / Pretoria - South Africa

The Indian Department of Science & Technology (DST-India)

New Delhi - India

The Directorate for Cooperation, French Embassy - Ministry of Foreign Affairs (French Gov.)

Paris - France

The Directorate for Cooperation, Italian Embassy - Ministry of Foreign Affairs (Italian Gov')

Roma - Italy

The Directorate for Cooperation, Swiss Embassy - Ministry of Foreign Affairs (Swiss Gov.)

Bern - Switzerland

National Research Foundation of South Africa (NRF)

Pretoria - South Africa

The Abdus Salam International Centre for Theoretical Physics (ICTP-Italy)

Trieste - Italy

The Academy of Science for the Developing World (TWAS-Italy)

Trieste - Italy

The International Organization of Women in Science (OWSD)

Trieste - Italy

The Chinese Academy of Sciences (CAS)

Beijing - China

The Commission for Science & Technology (COMSTECH)

Islamabad - Pakistan

The African Laser Centre (ALC)

Pretoria - South Africa

Ithemba LABS - National Research Foundation of South Africa (TLABS)

Faure - South Africa

L'Oréal - UNESCO Foundation

Paris - France

The African Institute for Mathematical Sciences (AIMS)

Buea - Cameroon and Muzenberg - South Africa

The Optical Society of America & SPIE (OSA & SPIE)

Rochester - USA

The Deutscher Akademischer Austauschdienst (DAAD)

Bonn - Germany

The Deutsche Forschungsgemeinschaft (DFG)

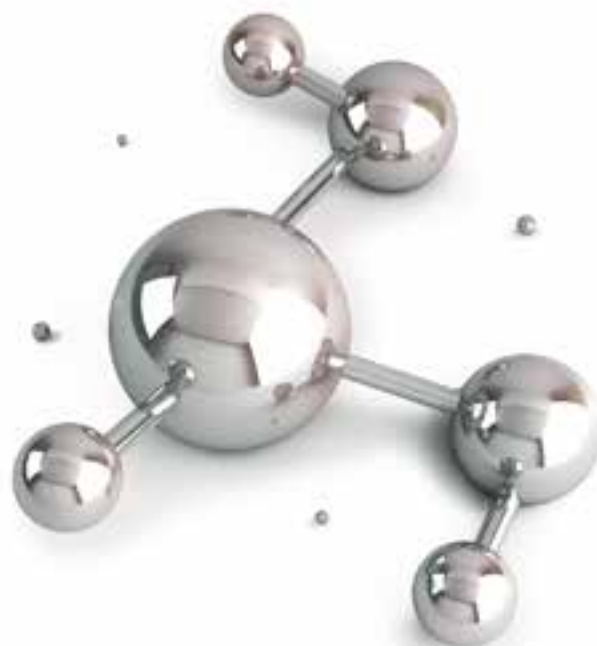
DFG/ Bonn-Germany


The Global Cultural Council (GCC)

Mexico - Mexico

The International Commission for Optics / Commission Internationale pour l'Optique (ICO-CIO)

ICO-CIO





"In the last five years the concentration of our nano research was largely with a focus on the hard sciences. Within this focus extensive research outputs were achieved as well as the development of young researcher and postgraduate students. It is our contention that in the next five years nano research outputs of the past and practical onward research would have a concerted effort on packaging our research towards maximising tangible benefits for common men and women in the street as well as, from simplified findings, we shall speak to policy makers"

Prof Thenjiwe Meyiwa

VP: Research Postgraduate Studies, Innovation and Commercialisation
UNISA

"The Unesco-Unisa Africa Chair for Nanotechnology under the leadership of Prof Malik Maaza has firmly established itself as the African hub for nanotechnology research. The benefits of the work undertaken by Prof Maaza and his group extend across Africa, while the excellent quality of the research means that the group not only enjoys international recognition, but has an extensive network of African and international collaborators. The future looks bright for nanotechnology research at Unisa and in Africa."

Prof Hugo Lotriet

Director: School for Interdisciplinary Research and Graduate Studies
UNISA

