The 122nd Annual General Meeting of the Southern African Institute of Mining and Metallurgy was held at the Country Club, Napier Road, Auckland Park, Johannesburg on Thursday 15 August 2019.

Welcome
The President, Alastair Macfarlane, extended a special welcome to the guests and representatives of our sister institutes and other associations, and also to recipients of awards, senior members of industry, Honorary Life Fellows, Past Presidents, our members, and other guests, among them the following:

- **Association of Mine Engineers of South Africa**
  - Mthi Mtshengu, President
- **Engineering Council of South Africa**
  - Cyril Gamede, President
- **Institute of Mine Surveyors of South Africa**
  - Ebrahim Ramzan, President
- **Geological Society of South Africa**
  - Siliso Siwela, President
- **South African Colliery Managers Association**
  - Thabang Monyele, Vice President
- **South African Council for Automation and Control**
  - Alfred Schroder, President
- **South African Institution of Chemical Engineers**
  - David Lokhat, President
- **South African Institute of Electrical Engineers**
  - George Debbo, President
- **South African National Institute of Rock Engineering**
  - Paul Couto, President
- **Women in Mining South Africa**
  - Thabile Makgala, Chairperson

Past Presidents attending
- Alf Brown
- Marek Dworzanski
- Henry James
- Rodney Jones
- Gys Landman
- Cuthbert Musingwini
- Selo Ndlovu
- Joshua Ngoma
- Dick Stacey

Minutes
The minutes of the previous Annual General Meeting, published in the September 2018 issue of the *Journal* and sent to all members, were confirmed.

Obituaries
The President announced the deaths, during the year, of the following members.

Fellow
- Carel Aron Roodt

Retired Fellows
- Robert Edward Franklin Cowley
- Frederick de Vries
- Philip John Donne Lloyd
- John Arthur Luckmann (Chairperson of the Johannesburg Branch 2016-2018)

Member
- Charl Petrus Celliers

Retired Members
- Raymond John Thomas Butler
- Dieter Robert Chelius
- Frank Fenwick
- Kenneth Michael

Associates
- Andrew William Jameson
- Adriaan Albertus van Jaarsveld

In memory of the deceased and in sympathy with the bereaved, all rose and observed a moment of silence.

Honorary Life Fellowship

Isabel Geldenhuys: Honorary Life Fellowship is awarded by the Council to Corporate Members of the Institute who have rendered outstanding service to the Institute over many years. It is my pleasure to announce that the Council has decided to award Honorary Life Fellowship to:

- Marek Dworzanski, for his outstanding service and support of the SAIMM over many years.
- Cuthbert Musingwini, for his outstanding service and support of the SAIMM over many years.
- Kathryn Sole, for her outstanding service and support of the SAIMM over many years as well as her role as the Chairperson of the Organizing Committee for the Copper-Cobalt Conference.

Brigadier Stokes Memorial Award

Alastair Macfarlane: The Brigadier Stokes memorial Award was instituted in 1980 to commemorate the outstanding contribution to the South African mining industry made by Brigadier R.S.G. Stokes, an honorary Life Fellow and Past President of this Institute. This is the premier award of the Southern African Institute of Mining and Metallurgy and is made to an individual
for the very highest achievement in the South African mining and metallurgical industry. It gives me great pleasure to announce that the award for 2019 is to be made to David Lancaster Hodgson.

David Hodgson was nominated by Alan Field, who was unable to attend the presentation. The citation was then read by Alastair Macfarlane:

David Hodgson was born in 1947 at Premier Diamond Mine in Cullinan, where his father had designed and recommissioned the mine after World War II. His choice of Civil Engineering as a career was influenced by the work done by Professor Jennings, Professor Marais, and his father on designing the valley slimes dam at the mine in the early 1960s.

The tutor for his final-year project at Wits University in 1970 was Oskar Steffen, the topic being the factor of safety of the highwall of the M1 motorway opposite Brenthurst. Amazingly, neither the consultants, nor the provincial roads department, nor the doctors in the corridors of the CSIR had done actual, specific calculations as they considered the parameters to be within the accepted safety limits. After roadbuilding for C&I Reid and Basil Read, De Beers offered David a scholarship to the Royal School of Mines in London, where he obtained a first class BSc Honours in Mining and the Institute of Mining and Metallurgy. UK awarded him the Charleton Prize.

The commissioning in 1982 of Jwaneng Diamond Mine in Botswana, described by Sir Harry Oppenheimer as the most important primary diamond deposit found anywhere in the world since the Kimberley discovery in 1871, was one of the highlights of his career. His role of production manager was for the start of the open pit, including the first blast, the building of the 400 000 t/month treatment plant, and meeting the commissioning criteria (which had important financial implications for Debswana). Sir Seretse Khama passed away before the final commissioning function, but President Quett Masire and Harry Oppenheimer officiated at the ceremony in 1982. Jwaneng is today considered to be one of the mines with the highest NPVs worldwide.

Vaal Reefs no. 9 Shaft, now Kopianang, was his next commissioning role. As production manager, his responsibilities included the capping of the ventilation shaft, equipping of the 2700 m deep main shaft, and all the infrastructure, comprising some 150 MW of equipment.

From 1990 to 1997 he was based in Welkom, where he filled the roles of mine manager at Western Holdings, President Brand, and then Regional General Manager/Consulting Engineer of the Anglo American operations in Welkom, which entailed responsibility for 23 shafts and some 80 000 employees. As Manager: Services in 1990 he was the project manager for the final sinking and the commissioning of Freddies no. 1 Shaft, Tsephong. During this time he also attended an Advanced Management Program (AMP) at Harvard University.

As Regional General Manager/Consulting Engineer at Western Deep Levels in 1997–1998 he had the privilege of running the deepest mines in the world, as well as managing the deepening of the shafts at the South Shaft, Mponeng. The commissioning of the surface ice plant with the latest Israeli technology was an especial challenge as the tips of the impellers were moving at the speed of a Stealth bomber’s wings and were initially disintegrating.

After 50 years of living on mine sites in South Africa, the UK, Canada, Brazil, Namibia, and Botswana, David was moved to the corporate office in Johannesburg. As Head of Technology and Innovation at AGA in 1999–2000 he initiated Project Autek with Mintek, with the purpose of enhancing and applying the catalytic properties of gold nanoparticles. The first global conference on this topic was held in Cape Town in 2001, and the delegates included the world’s leading researchers in this field. Subsequent conferences were held in Vancouver, Limerick (Eire), and Heidelberg.

At mine level, an implementation project for quieter, lighter electric drills was run with Hiti. He considers his biggest disappointment not being able to get simplified face drill rigs operating in all the underground stopes, as this would have improved safety and productivity. Diamond wire cutters, oscillating disc cutters, rock splitters, and other projects also failed to become continuous operational tools.

From 2001 until his retirement in 2005, David was the Chief Operating Officer and an executive director of AngloGold Ashanti, at that time the biggest gold-producing company in the world with output of 6 million ounces of gold per annum from 22 operations in 11 countries on four continents.

Since his retirement David has served as a non-executive director on the boards of five listed Canadian companies, a London-listed company, and two JSE-listed companies.

One of the most technically interesting roles was that of Chairman of ISSI (Integrated Seismic Systems International) and ISSP (Integrated Seismic Systems Pacific) from 2000 to 2006. These companies were arguably the most advanced in mine seismology worldwide and operated in 25 countries.

David Hodgson came forward to collect his award from Alastair Macfarlane, and delivered the following acceptance speech:

Champions and Centres of Excellence

Mr President, Members of the Council, Members, and Guests …

It is a great honour for me to be nominated for the prestigious Brigadier Stokes Memorial Award for 2019, and I am suitably humbled to have unexpectedly received this award. When I review the list of previous recipients I feel even more honoured. I would like today to pay tribute to the Champions, a number of whom are previous recipients, and to the Centres of Excellence which I was fortunate enough to be associated with.

The first recipient of the award, Harry Oppenheimer and another recipient, Ben Alberts, were champions in the leadership and people category. This is an important facet in our industry as people make the difference. They both had ability to give you their full attention and to make you feel important when talking to you. When one became a consulting engineer in the Anglo Group you received a Christmas present from HFO. It was not the champagne nor the whiskey which were important – it was the handwritten note from HFO which was hugely appreciated by all who received the gifts. It was a sad day when this personal touch was lost.

At an SAIMM conference Ben Alberts spoke about the many graduates being mentored in the greater Iscor Group. He made them send quarterly self-appraisals to his secretary and he personally followed up on a few and spoke to them. This inspired me to implement the same system for the graduates I was mentoring at Vaal Reefs, and it worked. I extended this to inviting some for the graduates to our home for dinner. I later enjoyed being on the same small touring group as Ben to the World Cup Rugby in Cardiff in 1999.
We need to encourage and mentor the young graduates and diplomats who are the future of our industry. Any investment that the government can make into old technikons and artisan training centres would be a win-win for our industry and the country.

Bobby Godsell, another recipient and my boss for 10 years, informed me as the head of Technology and Innovation at AngloGold Ashanti in 1999/2000 that I was to take over the confidential Anglo American Research Laboratories (AARL) research project, then in the very early stages, into the catalytic properties of gold. En route from North America early in 1999 I organized lunch in a London pub with a manager from the World Gold Council (WGC) and the two top researchers in the UK in this field. Together with Peter Radcliffe we convened a meeting in Sandton in mid-1999 with these three people plus the Professor of Chemistry at UCT and senior managers of Mintek, which was then, and hopefully still is, a renowned centre of excellence. Despite opposition from the academics I insisted on a conference in Cape Town in February 2000. Professor Masatake Haruta from Japan, the first researcher into the catalytic properties of gold, gave the keynote address. The first five questions were put by researchers from different countries around the world, and this was the first time any of them had met face to face and agreed to share their experiences. After doing some homework into battery development and the catalytic properties of platinum, I realized that it would be necessary to harness the best global brains and commercial capital, such as BASF, if any progress was to be made in this field. Mintek was a founding partner of the project, which was named Autek, and they took over the AARL IP and established a strong research team. Peter, the WGC, and Mintek organized Project Autek conferences in Vancouver in 2003, in Limerick Ireland in 2006, and later on in Heidelberg Germany.

CSIR MiningTek was another Centre of Excellence. In 1999/2000 I was Chairman of the DeepMine project, managed by MiningTek. The challenge was to determine if the Witwatersrand gold deposits could be mined safely down to 4 500 metres below surface to extend the life of the mines. World-class brain power from MiningTek, the mining companies, and equipment providers went into all the aspects of mining safely at great depths. The Social Sciences department at Wits even sent people to live in the hostel at Elandsrand to determine what the mineworkers felt about mining at deeper levels. The answer was ‘no problem’, just ‘Nika lo Mali’. Technically it is possible to mine safely at 4 500 metres but the economics would likely prevent this becoming a reality. Now that the cost of electricity is around 88 cents per kilowatt-hour and still rising, representing around 23% of total costs, the possibility of mining economically at greater depths is unlikely.

I would like to briefly pay tribute to another two recipients of the Award, namely Oskar Steffen and May Hermanus, for their interest in another world-class centre of excellence, Integrated Seismic Systems International (ISSI). May Hermanus was then the Chief Inspector of Mines and focused on mine safety, and Oskar had established a global consulting company with a solid reputation. (Oskar was one of my Soil Mechanic lecturers at Wits and mentored my final-year laboratory project, which was to establish the factor of safety of the highwall on the Ml opposite Brenthurst). ISSI was undoubtedly the global leader in mining seismology and ran an annual conference and training session in Stellenbosch for their clients, who came from 25 countries. They both took the trouble to attend and I believe that we managed to convince May that South Africa was the global leader in deep mining seismicity and that we were open to any new ideas and technologies. Oskar commented that ISSI represented one of the best collections of mathematical research brains that he had encountered, as our team included PhD students in maths, applied maths, and physics in addition to mathematicians from Russia and Hungary.

In conclusion, my challenge to the young professionals and the industry leaders of today is to turn two of South Africa’s technical challenges into opportunities.

Firstly, there are megalitres of polluted underground water flowing from the old Blyvooruitzicht shafts into the Western Deep Level mines, as well as from the old Stifffontein shafts into the deeper Vaal Reefs shafts. South Africa is a water-scarce country and this water needs to be treated and fed back into the grid. A similar project was planned in the Westanoria region in late 1990s but never got off the ground. Serious government support for such a project is necessary, but someone needs to act as champion and create a centre of excellence to turn this threat into an opportunity. This is not rocket science, as the coal mines have developed similar projects.

Secondly, South Africa has over 70% of the world’s platinum resources and the platinum mines are an important source of employment and government revenue. However, a number of shafts are currently loss-making and the refineries are intensive energy users. Champions and centres of excellence are required to find more efficient ways to recover PGMs and to exploit new technologies to lower the costs of electricity. Bill and Belinda Gates funded an extension of a successful malaria control programme which we initiated in Ghana. Elon Musk has both solar and battery companies, and while I concede that he is otherwise distracted perhaps his companies or similar companies such as Johnson Matthey can be persuaded to become involved in a project to provide cheaper power to the platinum mines. After all, if the President of South Africa can dream about technological cities and bullet trains we can also have aspirations.

In 1973 the Council of the Institute of Mining and Metallurgy in London awarded me the Charleton Prize when I left the Royal School of Mines. This prompted me to join the SAIMM in 1974 after I returned from Canada a few years ago.

Mr President, thank you once again for the honour of this prestigious award. I wish the SAIMM well in the future.

Presentation of awards, medals and certificates

Isabel Geldenhuys: announced the following awards, medals and certificates which were presented by Alastair Macfarlane.

50-year membership awards
(with effect from 1 July 1968 to 30 June 1969)

Some of these awards may be made to the recipients at their homes.

➤ George Francis Bainbridge
➤ Noel Phillip Finkelstein
➤ Hendrik Albertus Daniel Kirsten
➤ Ian Connell Robinson
➤ Desmond Giulio Sacco
➤ Waldo Edmund Stumpf
➤ Thomas Keith Whitelock

Gold and Silver Medals

All Transactions published in the Journal from March 2018 to February 2019 by members of the Institute were considered.
Gold medals
Gold medals are awarded for papers that are of a world class standard and judged to be publications that will become key reference in their mining or metallurgy field in the future.
Gold medals were awarded to:
De Villiers Groenewald, Lloyd Nelson, Rodney Hundermark, Katlego Phage, Rivashan Sakaran, Quintin van Rooyen, and Angelique Cizek for their transaction paper published in the April 2018 Journal entitled: ‘Furnace integrity monitoring using principal component analysis: an industrial case study’.
As non-members, De Villiers Groenewald and Angelique Cizek received certificates of merit.

Silver Medals
Silver medals are awarded for papers which make a major contribution to the professions of mining and metallurgy and to the prestige of the Institute.
Silver medals were awarded to:
Francois Malan and John Napier for their transaction paper published in the March 2018 Journal entitled: ‘Reassessing continuous stope closure data using a limit equilibrium displacement discontinuity model’.
Eleanore Forner, Jaco Scheepers, Jaco du Toit, and Graeme Miller, for their transaction paper published in the November 2018 Journal entitled: ‘Copper electrowinning circuit design: optimized costing as a function of cell arrangement, productivity, rectiformer size, and throughput’.
As a non-member, Jaco du Toit received a certificates of merit.
The Awards and Adjudication Committee also requested that special mention be made of the paper that was published in the March 2018 Journal entitled: ‘Silicomanganese production of Transalloys in the twenty-tens’.

Presentation of Student Prizes
Isabel Geldenhuys: announced the student winners of the SAIMM Prestige Prizes and Alastair Macfarlane presented the awards to the students adjudged by their departments to be the best final-year students in 2018.

University of the Witwatersrand
Mining K. Kunene
Metallurgy F. Marais

University of Pretoria
Mining J.H. Maritz
Metallurgy No award

University of Johannesburg
Mining No award
Metallurgy M. Mulaudzi

University of Cape Town
Mineral Processing D. Ssebunnya

University of Stellenbosch
Mineral Processing M.-A. Smit

Cape Peninsula University of Technology
Chemical Engineering K. Reddy

SAIMM 5 Star Incentive Programme
The SAIMM 5 Star Incentive Programme was introduced in 2015 to thank members who contribute to the growing membership of the SAIMM and to provide additional benefits to Fellows and Members of the SAIMM. The following winners will receive free attendance at the Annual Banquet in 2019.
The Top 5 proposers are: Darius Muma, Fabian Nieuwenhuys, Aubrey Mainza, Coenraad Esterhuizen, Didintle Bantobetse.
The Top 5 referees of papers published in the Journal Rudra Mitra, Marek Dworzansowski, Markus Erwee, Steven Rupprecht, Declan Vogt.
The authors who submitted and published the greatest number of papers in the Journal are: C. Musingwini, J. van Dyk, C.A. Strydom.
The top advertiser in the Journal The award for the most supportive advertiser in the Journal was made to Weir Minerals Africa. Hoosen Essack received the award on their behalf.

Annual Report And Accounts
Alastair Macfarlane presented the Annual Report with highlights of his year.
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Accounts
The Honorary Treasurer, Vaughn Duke, presented the financial statements, which are reproduced in the Annual Report in this edition of the Journal.

Office Bearers and Members Of Council for 2019/2020
Alastair Macfarlane announced the Office Bearers for the ensuing year, elected by the retiring Council in accordance with Clause 3.5 of the Constitution, and By-law B5.2 of the Constitution:

- President: Mzila Mthenjane
- President Elect: Vaughn Duke
- Senior Vice President: Isabel Geldenhuys
- Junior Vice President: Zelma Botha
- Immediate Past President: Alastair Macfarlane
- Honorary Treasurer: Vaughn Duke

In terms of the election of ordinary members of Council (Clause 3.5.7 of the Constitution and By-law B2.1), there were fourteen vacancies and the following members are now declared elected:

- Bekir Genc
- William Joughin
- Gary Lane
- Elias Matinde
- Godknos Njowa
- Bongi Ntsoelengoe

In terms of By-law F5.2 and F5.3 of the Constitution, the Chairpersons of the Branches are as follows:

- Botswana: Vacant
- DRC: Susa Maleba
- Johannesburg: Danie Jensen
- Namibia: Nikowa Namate
- Northern Cape: Fabian Nieuwenhuys
- Pretoria: Sezer Uludag
- Western Cape: Lawrence Bbosa
- Zambia: Darius Muma
- Zululand: Christo Mienie
- Zimbabwe: Clara Sadomba

The Chairperson of the South African National Council on Tunnelling (SANCOT) is Ron Tluczek.

These Chairpersons will serve as ex-officio members of Council.

In terms of By-law 14.4.6 the Young Professionals Council must consist of a minimum of 13 and a maximum of 18 members who are 35 years old and younger. We received the required number of nominations and did not have to conduct a formal voting process. The members of the YPC have been ratified by the outgoing Council.

The Office Bearers of the YPC are:
- Chairperson: Gangatha Dabula
- Vice-Chairperson: Adrian Chinhava

Alastair Macfarlane thanked those Past Presidents who indicated that they cannot serve on Council for the next year, for all their time, effort, and dedication in the past.

He also thanked the Past Presidents for their continued support. He congratulated all those elected, and thanked those who agreed to serve another term of office.

Honorary Vice Presidents of the SAIMM for the 2019/2020 Session
The SAIMM has a long-standing arrangement of inviting the Ministers of the Departments of Mineral Resources and Energy, Higher Education, Science and Technology, and Trade and Industry to serve as Honorary Vice Presidents.

These positions are intended to create closer collaboration between our organizations so that we may better serve the needs of our members and the industry.

We will be arranging to meet with these Ministers to foster this collaboration going forward.

Election of Auditors and Honorary Legal Advisers for the year 2019/2020
Alastair Macfarlane proposed, and it was agreed, that Genesis Incorporated be appointed as Honorary Legal Advisers.

The Chairperson and Vice-Chairperson will represent the YPC on the SAIMM Council.

The following Past Presidents have signified their willingness to serve on Council for the ensuing year:

- Nic Barcza
- Richard Beck
- Roger Dixon
- Henry James
- Rodney Jones
- Cuthbert Musingwini
- Selo Ndlovu

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Outgoing Presidential Award
Alastair Macfarlane came forward to accept a commemorative plaque as a memento of his term of office.

Induction of President
Alastair Macfarlane introduced the new President, Mzila Mthenjane, who will be heading up your Institute as we celebrate our 125th Anniversary, and then called upon Isabel Geldenhuys to read his curriculum vitae.

Presidential Address
Mzila Mthenjane presented his Presidential Address entitled: Post-mining use of rehabilitated land – an opportunity for the South African mining industry for sustainable development, which is reproduced elsewhere in this edition of the Journal.

Vote of Thanks
Vaughn Duke gave the the vote of thanks.

Closure
The meeting closed at 19:00.

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Honorary Life Fellowship Awards

Rodney Jones announcing the award winners

Marek Dworzanowski, receiving his Honorary Life Fellowship from Alastair Macfarlane

Cuthbert Musingwini, receiving his Honorary Life Fellowship from Alastair Macfarlane

Brigadier Stokes Memorial Award

Alastair Macfarlane reading the citation of David Lancaster Hodgson

David Hodgson, recipient of the Brigadier Stokes Memorial Award, receiving his platinum medal

David Hodgson giving his acceptance speech

50-year Membership Award

Hendrik Kirsten, receiving his 50-year Membership lapel badge

Ian Robinson, receiving his 50-year Membership lapel badge

Rodney Jones presenting Desmond Sacco with his 50 Year Membership award, after the AGM
Gold Medal Award Winners

Lloyd Nelson, Rivashan Sakaran, Katlego Phage, Rodney Hundermark, and Angelique Cizek, receiving their Gold Medal Award, for their paper that was published in the Journal.

Silver Medal Award Winners

Selo Ndlovu, receiving her Silver Medal Award, for their paper that was published in the Journal.

Francois Malan and John Napier, receiving their Silver Medal Award, for their paper that was published in the Journal.

Eleanore Forner, receiving her Silver Medal Award, for the paper she co-authored, that was published in the Journal.

Student Prizes

Kanyisile Kunene receiving her student prize.

Maanda Mulaudzi receiving his student prize.

Hoosen Essack receiving the award on behalf of Weir Minerals Africa as the Most Supportive Advertiser in the Journal.
Office Bearers for 2019 / 2020 — Front row (from left to right): Alastair Macfarlane, Mzila Mthenjane, Vaughn Duke
Back row (from left to right): Rodney Jones, William Joughin, Isabel Geldenhuys
Past Presidents


Council Members

Front row (from left to right): Henry James, Bekir Genc, Alastair Macfarlane, Sam Moolla (Manager), Mzila Mthengane, Rams Ramokgopa, Selo Ndlovu, Jeanne Walls
Back row (from left to right): Rodney Jones, Steven Rupprecht, William Joughin, Danie Jensen, Isabel Geldenhuys, Vaughn Duke
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Members and their guests at the cocktail party

Tinyiko, Andzani, Linda, Mzila, Bertha and Jimmy Mthenjane

Desh Chetty and Selo Ndlovu

Mzila Mthenjane, David Hodgson and Edward Legg

Mbali, Mzila, Lucas, Bertha and Jimmy Mthenjane

Marek Dworzanski, Ian Ralston and Hoosen Essack

Paul den Hoed, Lloyd and Felicie Nelson and Rodney Hundermark
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Members and their guests at the cocktail party

Some of the SAIMM team: Front row (from left to right)
- Thato Letebele, Sam Moolla, Prudence Ntumeleng
- Camielah Jardine, Kea Shumba, Kelly Matthee, Dennis Makondesa

Kamogelo Manyelo, Nyadzeni Makhado, Mzila Mthethwane, Kelello Chabedi, Cuthbert Musingwini and Ida Motshegoa

David Hodgson, Dick Stacey and Hendrik Kirsten

Woody and Hennie Albertyn

David Fleming, Alf Abrown, Peter Radcliffe, David Hodgson

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Students