



South African Institute of Physics

PRESIDENT'S REPORT 2002-2003

0. Highlights

Shaping the Future of Physics in South Africa, perhaps the most exciting project that SAIP has ever undertaken, made good progress during the year thanks to high level of commitment from various stakeholders. Considerable effort also went into providing detailed feedback on the *Physical Science Curriculum Statement* for grades 10-12, to very good effect, while marketing efforts have focused on attracting young people into scientific careers by highlighting the excitement and accessibility of the career path. On the international side SAIP is developing a high profile in IUPAP and the 2005 general assembly will be held in South Africa, as will the UNESCO world conference on *Physics and Development*.

1. Council

The Council elected for the term July 2001 to July 2003 was as follows:

Patricia Whitelock (President)
Edmund Zingu (Vice-President)
Jaynie Padayachee (Secretary)
Japie Engelbrecht (Treasurer)
Johan Malherbe (Past-President)
Ramesh Bharuthram
Simon Connell
Hendrik Geyer
Diane Grayson
Harm Moraal

Executive Committee

Patricia Whitelock
Edmund Zingu
Jaynie Padayachee
(alternates: Johan Malherbe, Japie Engelbrecht)

The portfolios and conveners of council committees are:

Transformation	Edmund Zingu
Awards	Harm Moraal
Communications	Hendrik Geyer
Conferences	Johan Malherbe
Education	Diane Grayson
International Liaison	Ramesh Bharuthram
Marketing	Simon Connell

SAIP is represented on the SA Council for Natural Scientific Professionals (SACNASP), Federation of Scientific, Engineering & Technological Societies and Allied Professions (FEDSET) and the National Science and Technology Forum (NSTF) by J Malherbe and on the Microscopy Society of Southern Africa by J Engelbrecht.

The awards committee comprised Harm Moraal (convenor), Krish Bharuth-Ram, Fritz Hahne and Michael Feast, with Paul du Plessis as alternate.

Edmund Zingu was chosen to represent SAIP Council on the Management and Policy Committee for *Shaping the Future of Physics in South Africa* (see section 9).

Council meetings took place during the conference in September 2002, at the University of Potchefstroom for CHE, in February 2003 at the University of Stellenbosch with the conference organizers and finally again in Stellenbosch just prior to the Annual Meeting in June 2003.

2. Membership

As of 17 June 2003 the SAIP membership was as follows: 292 Ordinary, 12 Honorary, 104 Student, 26 Associate, 24 Retired, 12 Emeritus and 4 Institutional. This gives a total of 474 individual members, a slight increase over the previous two years. A total of 87 new members were recruited during the period September 2002 to June 2003. These numbers will decrease by about 50 when those who have not paid

their subscriptions for several years are removed from the database at the end of June. As of 17 June the existing honorary members are:

L Alberts, F Hahne, M.A. Hellberg, G Heyman, A Klug, RH Lemmer, FRN Nabarro, D Reitmann, B. Spoelstra, PH Stoker, JH van der Merwe, CB van Wyk.

3. Finances

The treasurer, J Engelbrecht, reports that the increased fees approved at the 2002 AGM have improved the financial health of the society. The process of allowing direct deposit of subscriptions, as well as invoicing by e-mail has improved the response from members and cut down on the societies mailing costs. The remaining problems with this are caused by failure of those paying to properly link their name with the payment. The treasurer must still distribute around 100 invoices by post as we do not have a complete and up to date email database. Please inform the secretary (secretary@saip.org.za) of your email address or any change to it.

In accordance with the constitution, the names of members two years in arrears with their subscriptions will be removed from the membership list at the end of June, having been given a final reminder earlier in the year.

Council responded to the challenge of saving costs by holding meetings associated with the conference, at the expense of the individual member, and only one meeting of two days duration in between; note that the single meeting was made more natural by the 9 month interval between the 2002 and 2003 Annual Conferences.

The treasurer was particularly pleased that the University of Natal made a profit from SAIP 2001, which made their report worth waiting for.

4. Annual Conference

The 47th Annual Conference was held, for the first time in the month of September, at the University of Potchefstroom for CHE in 2002. With 319 delegates registered for the conference, and 241 papers being presented, it appears that the change to September did nothing to dampen enthusiasm for the event. The conference was opened with a public lecture from Nobel laureate Professor Cohen-Tannoudji talking on *Introducing young children to "active" science* – a subject of particular importance within South Africa. Particular thanks to the organizers for producing a rapid report and returning a small profit to SAIP.

This year, 2003, the conference is being organized by the University of Stellenbosch, earlier than usual in the last week of June. With over 400 people registered and 287 abstracts received it is clear that this slight variation in the time of the conference has not seriously affected the attendance. Again we are privileged to hear a Nobel laureate, Professor Carl Wieman, address us on an educational topic: *Using research and technology to improve physics education*.

The increasing numbers of participants, particularly students, in the Annual Conference is wonderful, but it forces us to rethink the way in which we deal with the event; an ever increasing number of parallel sessions with vast numbers of 15 min presentations are not viable solutions. There was some discussion of this at the Potchefstroom AGM, but I hope we can agree to two things for the future. First, go to a conference of three full days, with the banquet at the end of the third day, and secondly be more selective about the oral presentations.

5. Awards

The Silver Jubilee Medal is awarded every second year, in odd-numbered years, and the presentation for 2003 will be made at the conference banquet. According to the constitution, the medal - which commemorates the Silver Jubilee year of SAIP - is awarded for outstanding achievement by a physicist under the age of 35 in any of the following facets of any branch of physics: research, education, technology and industrial development.

The De Beers Gold Medal is the most prestigious honour of the society and is awarded every second year, in even-numbered years. The 2002 recipient was Professor Walter Dieter Heiss, from the University of Stellenbosch, for his outstanding work in theoretical physics, performed while he was at the University of the Witwatersrand. The SAIP is very grateful to De Beers for sponsoring this medal and notes that the award is followed with considerable interest both locally and abroad.

A considerable number of other awards are also made to students for the best papers and posters presented at the conference each year in specific specialist fields. We see these as an important component of SAIP conferences and wish to express the SAIP's gratitude to the sponsors who make them possible. The SAIP sponsored a R1000 prize for the person with the highest physics score in the National Science Olympiad. The winner for 2002 was Raphaela Thaele from the Deutsche Schule Kapstadt. A medal will be presented to Raphaela during the banquet in Stellenbosch.

6. Specialist Groups

Membership of the specialist groups is as outlined below, as it was in June 2003. The two columns indicate individuals' primary and secondary interest.

	1 st	2 nd
Astrophysics	44	10
Lasers, Optics and Spectroscopy	33	19
Solar-Terrestrial/Plasma	21	22
Nuclear, Particle and Radiation	60	32
Solid State and Materials Science	120	43
Theoretical	18	28
Education	30	42
Applied and Industrial	41	76
General	9	19

The Astrophysics and the Solar-terrestrial/plasma groups have been working closely together during 2003 with the expectation that they will merge to form an Astrophysics and Space science specialist group in accordance with the recommendations of the Transformation Committee. The Transformation Committee also recommended a change in the name of the Applied Physics Interest Group to the Applied and Industrial Physics Group which has been accepted.

7. Electronic Newsletter and Web Pages

Judith Ncapayi (ncapayi@tlabs.ac.za) took over from Elmarie Mortimer as editor of the electronic newsletter early in 2003, many thanks to both of them for this important service. This newsletter provides a relatively informal link between members and could be a much more useful forum for discussion than it is; I would strongly encourage members to make contributions. If you would like to receive the newsletter and are not already doing so, please send your email address to the secretary (secretary@saip.org.za).

The web page has changed hosts from the University of Stellenbosch to a commercial company. This has allowed the registration of a more memorable address: <http://www.saip.org.za/>, and the Secretary to manage the new-look web site. Please submit details of job vacancies, conferences, bursaries, etc to her. I would like to thank the Department of Physics at Stellenbosch for providing the infrastructure and support for the SAIP web-site over the past few years and Jaynie Padayachee for providing the new image.

8. Transformation

The report of the transformation committee, which was presented to members by the chair of the committee, Edmund Zingu, during the 2002 AGM, was distributed via the SAIP web page. Members were invited to send in comments and these were taken into account when Council considered the report in detail at their two day meeting in February 2003. The recommendations approved by Council involve a wide variety of changes, some of which will require alterations to the Constitution or to the By-laws, these will be detailed in a separate document for distribution prior to the AGM and for appropriate consideration by the membership.

9. Shaping the Future of Physics in South Africa

It became evident to many of us that the status quo in physics was not sustainable. Facilities for research and the researchers are losing their competitive position and there is insufficient investment in them. A new focus is required which will have high impact, international standing, and consistency with the National R&D Strategy. The process of shaping the future of physics in South Africa was conceptualized by the interaction and interest of the Department of Science and Technology, the National Research Foundation and the South African Institute of Physics. Through this process a strategy will be developed that will inform Government, industry, the research community and academia about the steps that need to be taken for physics to have a positive socio-economic impact.

Regional workshops were conducted where participants, mainly academia and industry, reflected on the problems that they are experiencing, speculated on possible solutions and gave their support to the process that has been developed to improve physics in South Africa.

The National Stakeholders Meeting was held at the National Research Foundation in Pretoria on 16 May 2003. The meeting was attended by 51 people from academia, industry government and science councils. The purpose of the meeting was:

- to broaden stakeholder community, beyond academic physicists
- to develop and provide visibility to the democratic nature and profile of the process,
- to approve the terms of reference for the Management & Policy Committee,
- to nominate and elect the members of the MPC
- to approve the terms of reference for the Technical committee

- to appoint members to the Technical Committee

The Management and Policy Committee met on 12 June and considered the membership of the International Panel and the proposed plan for the review and foresight process. The Panel consisting of two South Africans and four foreign physicists is expected to commence its work late this year and submit its report (review and strategic plan) early (before March) next year. The project is being funded by the Department of Science and Technology and the National Research Foundation. Regular reports on the progress of the project will be posted on the SAIP website.

10. Education

Diane Grayson, as the Council's representative, went to a great deal of time and effort in giving detailed feedback to the National Department of Education on four drafts of the proposed *Physical Science curriculum statement* for Grades 10-12 between May 2002 and April 2003. The drafts were problematic, in part because no professional scientists were involved in the working group which produced them. Furthermore, the time frames were very tight, with the working group being placed under tremendous pressure to produce the curriculum quickly, and the feedback also being required within very short spaces of time. A number of our suggestions were taken up in later drafts, and our contribution was appreciated and acknowledged by the Department of Education. They also indicated that they would consult us when the more detailed curriculum was developed. Furthermore, Diane Grayson was one of three scientists invited to meet in person with the relevant members of the Department of Education to give further input into the curriculum after the April deadline for submission of comments had passed and before a submission was made to the Minister of Education.

In response to a request from the chair of the International Commission on Physics Education (ICPE), Diane Grayson and Case Rijkdsdijk are organising an international conference on Physics Education. The conference will be held from 5-8 July 2004 in Durban, following on from the 2004 SAIP conference (in Bloemfontein). The theme will be "*What Physics Should We Teach?*"

11. Marketing

The three activities mentioned below form a coherent effort, coordinated by Simon Connell, to develop the profile of science in the schools as an exciting and accessible career path, and therefore attract more young people into science.

The Physics Emasondosondo Project: The SAIP is a partner in a programme of physics outreach, aimed at disadvantaged high school learners. The programme is based around a mobile physics laboratory, accompanied by scientists, teachers and students equipped to run a varied physics program and provide teacher support. The physics program contains visually exciting physics demonstrations, hands-on exploratorium activities and also team based project experiments, all targeted at high school learners. It is especially important for learners to encounter young postgraduate students, whom they can talk to and identify with very easily. This is the second year of the project. The first year (2002) visited about 3% of the Gauteng and Western Cape Schools. This year, the programme is extended and the construction and stocking of a dedicated vehicle is complete. The project media are also better developed. The project has also spread to additional regions. The 2003 visits will begin shortly after the conference. Physics Emasondosondo is financed by the USA National Science Foundation and the Gauteng Provincial Department of Education; please see the SAIP www page under "projects" for further details.

Science and Technology for Young Learners (STYLE): This is an initiative led by Kevin Govender (NECSA kg@aec.co.za) to establish learner-run Science Clubs in Schools. Activities and networks of contacts between the clubs and participating tertiary institutions and science-based industries are to be managed via a set of WWW-pages on the SAIP WWW-site. Some clubs have already been started. A joint venture has been established with the help of NECSA and the non-profit organisation ODT (Oukassie Development Trust) to take the idea to schools in their region in the North West Province. The Science Emasondosondo programme will aim to establish the STYLE clubs in the schools it visits as well, starting in mid July. The WWW-page has been launched, from the SAIP site under "projects". The letter inviting tertiary institutions and science-based industries to participate by facilitating visit, talks and other activities is ready to go out.

Schools participation in SAIP Conferences: As a pilot programme which will be further developed in the future, Kevin Govender (kg@aec.co.za) and the organizers of SAIP 2003 are arranging a special event targeted at senior learners and educators in the surrounding area – including some from as far away as Sutherland in the Northern Cape. The participants will have an opportunity to meet practising physicists and get a flavour of the research being performed within South Africa. They will also see some practical demonstrations and get an opportunity to do hands-on experiments. I believe there is a lot to be said for this approach, particularly after being told by a smart young engineering student that he had thought of doing physics at university, but his science teacher had told him it was boring. There should be no doubt about it - we have to get through to those educators if we want more physics students.

The SAIP based projects mentioned above have been registered with the Education Department via participation in the MST Projects' Fair held on the 17th March by the Gauteng Institute for Educational Development.

