

South Africa Member of AIHTC (1) Overview

(Greenwich Mean Time, UTC/GMT+2, Population: 59 million)

1. Organizations

South Africa has no specific heat transfer and/or thermal science societies and most scholars conducting heat transfer research are members of the South African Institute of Mechanical Engineers (SAIMEChE) or the South African Institution of Chemical Engineers (SAIChE).

2. Major Meetings

There are no regular national meetings dedicated to heat transfer and thermal sciences. However, contributions on heat transfer and thermal sciences can be presented at the South African Conference on Computational and Applied Mechanics (SACAM) which takes place every two years. Further, 15 major international conferences under the auspices of HEFAT (International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics) have been organized from South Africa since 2002 by Prof Josua Meyer. Four of these conferences were presented in South Africa. The next HEFAT2022 conference has been scheduled for 8 – 10 August 2022 in Amsterdam. The conference website is available on: hefat2022.org



South Africa was also selected by the AIHTC as venue for the next 17th International Heat Transfer Conferences (IHTC17); which is considered as the “Olympics of Heat Transfer” and is being presented only every fourth year. The conference was scheduled to be presented in Cape Town in August 2022. Because of the Covid-19 international travel restrictions the conference has been postponed to 3 – 7 July 2023. The conference website is available on: IHTC17.org



3. Major journals

There are no South African journals dedicated to heat transfer or thermal sciences. However, articles on heat transfer and thermal sciences are accepted for publication in the accredited R&D Journal of the SAIMEChE. Most scholars publish their work in well-established English journals listed on the International Scientific Index (ISI) and/or articles listed by Scopus. Articles published in these journals earn funding from the Department of

Education that subsidizes most universities in South Africa. At many universities financial incentives exist to publish in journals with high impact factors.

4. Education (undergraduate and postgraduate studies)

South Africa has 27 universities of which many offers engineering. The quality and standards vary but the quality of the below eight universities are very high as these Universities has been accredited by the Engineering Council of South Africa (ECSA). Since ECSA is a signatory of the Washington Accord the programmes are accepted for professional registration via the International Engineering Alliance in the following 20 countries: Korea, Russia, Malaysia, China, South Africa, New Zealand, Australia, Canada, Ireland, Hong Kong China, Chinese Taipei, Singapore, Sri Lanka, Japan, India, United States, Turkey, United Kingdom, Costa Rica, Pakistan and Peru.

University of Cape Town
University of Kwazulu-Natal
Nelson Mandela Metropolitan University
North-West University
University of Pretoria
University of Johannesburg
University of Stellenbosch
University of the Witwatersrand

All the above universities present four-year bachelor's degree, followed by a honours and/or masters and then a PhD-degree.

5. University System

The Council on Higher Education (CHE) is an independent statutory quality council for South African higher education. Its vision is to “... lead and manage quality assurance; research and monitor trends and development; initiate critical discourse on contemporary higher education issues; and provide advice to the Minister on strategy and policy. The main areas of work of the CHE are to: provide advice to the Minister of Higher Education and Training on all higher education matters on request, and proactively; promote a system of quality assurance for all higher education institutions, including private providers of higher education, which focuses on programme accreditation, institutional audits, national reviews, standards development, quality promotion and capacity development; monitor the state of higher education and publish information regarding developments in higher education on a regular basis; and contribute to the development of higher education through intellectual engagement with key issues in a number of activities in partnership with relevant stakeholders”.

The academic ranks at most universities are junior lecturer, lecturer, senior lecture, associate professor and professor. Tenure is commonly awarded after 2 years since the appointment. The mandatory retirement age is 65. In some exceptional cases further contract appointments are made. Retired professors are usually appointed after retirement as “emeritus professors” and may continue conducting research and supervision of postgraduate students.

6. Foundations of Scientific Research

The only general foundation of research support is the National Research Foundation (NRF). It is an independent statutory body that funds research, high-end human capacity and critical research infrastructure to promote knowledge production across all disciplinary fields. Funding levels are usually very low and therefore most scholars rely on international research foundations and industry for research funding.

7. Major Public/Private Research Institutes

Most research in heat transfer is conducted by individuals or research groups within universities. Usually in programmes that offers mechanical-, chemical- and/or nuclear engineering.

by Prof Josua P Meyer (University of Pretoria) and Prof Jat du Toit (North-West University)