ture from a region of interest placed over both eyes during the recording.

The highest temperature was found in one subject (age 6 yrs) with 390C at the arm axilla and 38.60C at the eye. A few hours before, the subject complained of fever symptoms, measuring 37.50C at the axilla and 37.40C at the eye canthus. After two doses of antibiotic her temperature fell to36.70C axilla, and 36.40C eye, both in normal limits. Another subject with tonsillitis (age 2 years) recorded 38.60C at the eye, and 38oC axilla. Another 2 yr old registered 37.7 underarm and 37.3 at the eye. However ear radiometry was lower, 35.6 and 36.0 left and right respectively.

The radiometric measurements from the ear were only performed in 16 subjects, but no correlation was found with the other two methods, probably due to small sampling.

Although the number of fever subjects was small, the data indicate that raised temperatures could be rapidly found with the IRT camera, and raised temperatures were confirmed both by thermometry and clinical diagnosis.

News in Thermology

8th Course on the Theory and Practice of Infra Red Thermal Imaging in Medicine

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The 8th Course on the theory and practice of thermal imaging was held at The University of Glamorgan on 4-6th July 2007 (figure 1). Since the first course at The University was held in 2001, approximately 80 people have completed the course. The have been a number of changes in the course content since that time. This year, again Prof. Graham Machin of the National Physical Laboratory, and visiting Professor, lectured on traceability and calibration of thermal imagers and Dr Rod Thomas from Swansea, visiting Fellow at Glamorgan presented the subject of detectors and cameras. Prof.Kurt Ammer presented thermal physiology and clinical applications of thermal imaging, with aspects of standardisation and technique by Prof. Francis Ring. Dr Peter Plassmann lectured on self testing and quality assurance of thermal imagers, and on the image processing software CTHERM. Practical sessions included image capture (figure 2), and image processing, the latter takes place in a computer-training laboratory (figure 3), where everyone is able to work on a separate workstation, and the instructor can use a projected image for demonstration. The final session of the programme included and overview of the future for thermal imaging and a lecture by Prof. Ammer reviewing past conferences, scientific journals and societies working in thermal imaging for medicine, veterinary science and biology.

This is the only course of its kind, where physicians, engineers, physicists technicians etc. can all benefit from this practical programme. The emphasis of this course is to improve background understanding of the techniques and the correct use of standardised practice to improve re- liability. It does not set out to teach anyone how to diagnose clinical diseases. The short course is recognised by The Faculty of Advanced Technology at the University of Glamorgan.This year, for the first time, a one-day workshop based on the theoretical aspects of the course was given at Auburn University prior to the International conference on Medical Thermology in May. (1) In earlier years,

Figure 1
Participants of the 8th Course

Figure 2
Image capture of both hands in the dorsal view

a course was conducted at Sao Paulo University in Brazil by Prof. Ammer and Ring, and also in the Boltzmann Institute for Physical Diagnostics,Vienna Austria, both attracting a good number of participants. Certified teaching sessions have also been included in the meetings of the Polish Society of Thermology held in Zakopane, Poland.

In the early years, with a lack of textbooks and no formal teaching, medical thermographers required months, even years to gain experience at a time when the imaging systems were large, often unstable, and poorly understood. There is now a wealth of literature, the most comprehensive source

Figure 3
Analysis of captured images in the computer lab

now being the CD of publications and bibliography published by the Medical imaging research group at Glamorgan University. This was initially funded from the USA under the technology transfer programme. It is updated every few years, and the 2007 edition is now available with over 8,000 references (distributed to participants of the Auburn Workshop). In addition, UK course participants receive a copy of the "Casebook of Infrared Imaging in Clinical Medicine" (Jung, Zuber & Ring eds) Medpress Warsaw 2003.

Results from the practical work of previous courses have been published (2,3,4, 5) It was proven by these practical exercises, that even beginners in the technique of thermal imaging can reproduce both standard views and temperature readings from captured images at a high level of reliability.

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An Unofficial Impact Factor for Thermology international

The journal "Thermology international" is not yet tracked and recognised by the Institute of Scientific Information (ISI) which generates the annual impact factor. However, it is indexed since 2002 at Embase and was included in the database of periodicals at Ulrich´s-Web in the category Physics -Heat in August 2005.

A publication from the Department for Physical and Rehabilitative Medicine of the University Munich dealing with relevant journals in the field of rehabilitation medicine listed Thermology international in the subsection thermotherapy (1).

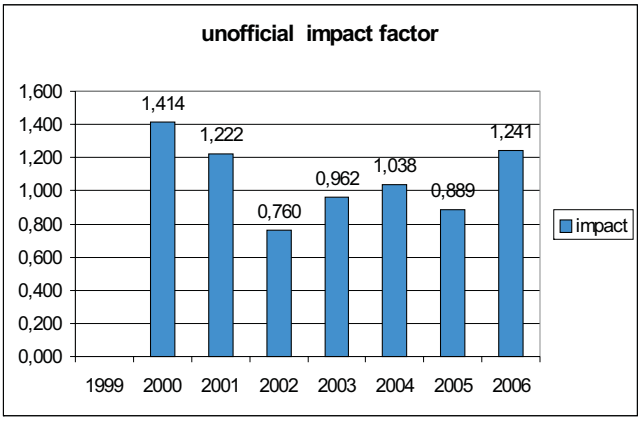
An unofficial impact factor can easily calculated (2) as the impact factor is "is calculated by dividing the number of current citations to articles published in the two previous years by the total number of articles published in the two previous years." The citing sources used for calculations of the impact factor are not clearly defined (3). They are definitely not restricted to journals already included in the database of ISI

For calculation of an unofficial impact factor the citation statistic of Google scholar was used. This tool accumulates citations over time and does not restrict citations to the 2 years period after publication of the cited article. For Thermology international 24 articles were cited 55 times in

other journals. These citations were checked for the time interval between publication of the cited article and the citation. A hand search was performed through all issues of Thermology international to obtain the number of published articles and also of self-citations to articles published in a time period of two years. Table 1 shows the cumulated findings from the search in Google Scholar and in Thermology international.

	articles	selfcited	cited	citations	2 years articles
1999	13	19	3	22	
2000	16	36	5	41	29
2001	11	27	6	33	27
2002	14	15	4	19	25
2003	12	24	1	25	26
2004	14	24	3	27	26
2005	13	15	9	24	27
2006	16	34	2	36	29
2007	16	17		17	32

Figure 1 shows the impact factors based on the data from table 1.



Due to its wide scope of topics, Thermology international fits into various categories of ISI academic journals. The five most appropriate are "Biology", "Biophysics", "Radiology, Nuclear Medicine & Medical Imaging", "Rehabilitation" and "Thermodynamics" The following defintions are provided by ISI for these five categories (4)

Biology
The Biology category includes resources having a broad or interdisciplinary approach to biology. In addition, it includes materials that cover a specific area of biology not covered in other categories such as theoretical biology, mathematical biology, **thermal biology,** cryobiology, and biological rhythm research.

This category includes 64 journals with a median impact factor of 1.135 (5).

Biophysics
Biophysics covers resources that focus on the transfer and effects of physical forces and energy-light, sound, electricity, magnetism, **heat, cold,** pressure, mechanical forces, and radiation-within and on cells, tissues, and whole organisms

This category includes 66 journals with a median impact factor of 2.332 (5).

Radiology, Nuclear Medicine & Medical Imaging;
Radiology, Nuclear Medicine & Medical Imaging covers resources on radiation research in biology and biophysics. Resources in this category focus on interventional radiology, investigative radiology, neuroradiology, radiotherapy, and oncology. Nuclear Medicine resources are concerned with the diagnostic, therapeutic, and investigative use of radionuclides. Medical Imaging resources are concerned with **computerized medical imaging** and graphics

This category includes 85 journals with a median impact factor of 1.665 (5).

Rehabilitation
Rehabilitation covers **resources on therapy** to aid in the **recovery or enhancement of physical**, cognitive, or social abilities diminished by birth defect, disease, injury, or aging.

This category includes 27 journals with a median impact factor of 1.300 (5).

Thermodynamics
Thermodynamics includes resources that focus on the areas of physics examining the transformations of matter and energy in physical and chemical processes, particularly those processes that involve the **transfer of heat and changes in temperature.** Relevant topics in this category include cooling and heating systems, cryogenics, refrigeration, combustion, energy conversion, and thermal stresses.

This category includes 27 journals with a median impact factor of 0.854 (5).

The current unofficial impact factor of Thermology international is 1.241, which is above the median impact of journals in the categories Biology and thermodynamic, slightly below that of rehabilitation journals and definitely below the impact of Radiology, Nuclear Medicine & Medical Imaging and of Biophysics, which shows with 2.332 the highest impact of all categories appropriate for Thermology international.

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