



# International NR Newsletter

No. 5, June 2008

International Society for Neutron Radiology  
([www.isnr.de](http://www.isnr.de))

## Editorial

The neutron radiography community is still a manageable number of people. Therefore it is hard to accept that the transfer of information being of general interest, i. e. of actual developments, of optimized equipment or data evaluation routines etc. is only working on a very small scale. Most times this only happens on personal friendship of members. As publication of those information often last years, if published at all, this may result in parallel developments at different places, thus wasting some more of the limited resources we have as a community and as individuals.

Of course this requires the commitment of quotation when using such information for own publications. I really believe that bearing in mind this fact, which should be taken for granted anyway, it will be possible to accelerate our developments in the field of neutron imaging drastically.

It happened to me several times, that I was working on a specific question for weeks and by pure chance I met a colleague who could immediately give me the solution or the missing information to complete my work successfully within a short time. Of course, I asked myself everytime, why I did not get the information earlier, why I wasted days or weeks. Well, the answer is quite simple: There was no forum where to place my question and where I can read about questions or problems of colleagues to offer them my help, if possible.

As a first step to overcome this unsatisfactory situation I suggest that you send me your questions and problems

by e-mail (as short as possible but as extensive as necessary). I will place it on the ISNR-webpage (at "information") together with your e-mail address, hoping that there will be substantial feedback by our members. If there is an increasing use of this simple type of information transfer I will set up a forum which then will be much more comfortable.

Hoping on extensive use of this possibility

Yours

*Thomas Bücherl*

## From the President of ISNR

*By Frikkie de Beer (fdebeer@necsa.co.za)*

I want to convey a very warm welcome to "new members" of the society who enrolled during the past 2 years. The society can only grow if the word is spread and that effort is put into to convince colleagues, students and friends who have an interest in neutron imaging, to enroll and participate.

I want to urge members again to frequently visit the ISNR web page and to provide information on activities in your region to our secretary, Thomas Bücherl, for publishing in forthcoming issues of the ISNR-newsletter.

In the aftermath of the WCNR-8 at NIST, I want to thank the organizers for the useful information retrievable from the DVD of the sessions of the conference and sent to all participants. It makes it easier to seek for relevant information quickly and efficiently.

**ISNR-board proposed initiatives:**

a) Utilization of the [www@ISNR.de](mailto:www@ISNR.de) web page:

It seems that the current usage of the society's web page is merely to find the contact information of members and/or to post advertisement of applicable workshops and conferences in neutron imaging. For members who use the web-site in this manner - good for you - others please do likewise. I still do think that the web-site [www.isnr.de](http://www.isnr.de) could be utilised in a more efficient way. The "NEWS" and "GALLERY" are still under construction from the start of the web-page. Thomas Bücherl, the ISNR-secretary, who is the custodian of the web-site, will tell more about items needed in these categories to post to him for publication on the web.

b) FAQ interactive section on [www.isnr.de](http://www.isnr.de) Webpage:

I would like to propose the establishment of a Question and Answer category on the web page where a question about any aspect, even about suppliers of equipment, could be asked and some expert in the Nrad community will eventually answer the question on the web or 1-1 with the questioner.

c) Standardization in neutron imaging:

A couple of devices and procedures in the production and assessment of neutron beams are well established. As film neutron radiography has established universal standards applicable in the assessment of the radiographs, these standards can not be utilized for the purpose of digital- radioscopic or tomography imaging. Most of the facilities where neutron imaging is being conducted are digital in their image output. My plea to the society (all members) is to think about the scope / need for such devices / procedures for digital and tomography imaging to standardize within the international neutron imaging community. This issue can be discussed at the forthcoming ITMNR-

6 in Japan amongst the ISNR-board and delegates.

d) Global gatherings for neutron imaging expertise (scientists / engineers / students / technicians) in 2008 are limited to:

i) the initiative of the European facilities in Germany and Switzerland to host from 20 April - 24 April a Workshop on Neutron Wavelength-dependent Imaging „NeuWave Imaging Workshop" in Garching, Munich, Germany. If you have an intention to upgrade your neutron imaging facility or to obtain experience in new applications of neutron imaging, make sure to attend this workshop.

ii) the 6<sup>th</sup>-International Topical Meeting on Neutron Radiography (ITMNR-6) at the Kobe University, Japan. This meeting is of specialist nature regarding a certain topic in neutron imaging but it remains an important meeting of neutron imaging expertise or anyone who is interested to join and come to knowledge of the current trends. This meeting is part of the ITMNR-series and is being scheduled and promoted by the ISNR-board.

iii) the 17th World Conference on Non-destructive Testing in Shanghai, China. As neutron imaging is eventually a non-destructive testing technique, it is advised to join such a conference and experience the uniqueness of neutron imaging and its benefits within the non-destructive community. You are all invited to contact the organizers of these events and to participate.

iv) WCNR-9: 2010 South Africa

Preparations by the Local Organizing Committee (LOC) at NeCSA, South Africa, are underway for the 9<sup>th</sup> World Conference on Neutron Radiography WCNR-9) to be staged in the African bush. The venue has been fixed to be a 4-Star hotel lodge in the Pilansberg nature reserve about 150 km from Pretoria, called Kwa-Maritane. The logo has been designed to be



Logo of the WCNR-9

showing the center of the 9<sup>th</sup> WCNR-activity focused at the Southern tip of Africa in 2010.

The next and more detailed invitation to delegates to attend the WCNR-9 will be staged at the ITMNR-6 in Japan. Please mark your diaries.

e) Census on the status of the International Neutron Imaging Society:

Many of us are concerned, with reasons, about the status and health of the ISNR-society and its members. It is always good to stand back and to observe what the status is of the Nrad facilities worldwide, the status of the people involved in neutron imaging but essential to learn from the statistics to be gathered what the current trends are in neutron applications and -technologies. I think that it is a pity that so many PhD students and others who are actually "Nrad experts" are lost to the neutron imaging community after their graduation or do not see a future in neutron imaging research while there is a possible world wide need for them to apply themselves with their experience to establish or maintain neutron imaging facilities. If the global picture can be established about the status of neutron imaging, the experts who want to leave the community will be able to see opportunities within the community to apply themselves to the full.

The first draft format of the layout of the proposed census will be available at the ITMNR-9 where it will be finalized by the ISNR-board. The first information will be gathered at ITMNR-6 for

the first survey to be completed within the next 2 years with the census survey results be available at the WCNR-9 in 2010 or earlier on the ISNR-Web page. The possibility to participate in the survey continuously on-line through the web could be a possibility.

f) Honorable and life-time membership of ISNR:

At an ISNR-board meeting at NIST during WCNR-8 in 2006, the importance to honor a person/group for outstanding contributions, performance and achievement in the past in the field of neutron imaging was discussed. This will be taken further at the ITMNR-6 in Japan and the first award(s), if decided and agreed upon by the board, will be made at WCNR-9 in South Africa during 2010.

## Facilities around the World on Neutron Imaging:

### SANRAD facility: South Africa

By Frikkie de Beer ([fdebeer@necsa.co.za](mailto:fdebeer@necsa.co.za))

Head: Frikkie de Beer

Phone: +27 12 305 5258

No. of employees: 2 x scientists & 1 x technician

Post graduate students full time past 2 years: 3 x MSc

The facility, with its neutron radiography/tomography capabilities, located at the SAFARI-1 nuclear research reactor and operated by Necsa, was extensively utilized during the past 2 years in a variety of industrial applications and university R&D fields. Focus was given to porous media research, geosciences, palaeo-sciences and petrophysics. Due to the x-ray complementary capability established at the facility, a QA-service was rendered to the PBMR-group.

It is envisaged that the facility will be off-line from July 2008 to Dec 2009

for upgrading its capabilities and infrastructure. Furthermore, a National Center for radiography and tomography are envisaged incorporating neutrons, gammas and X-rays (high energy and micro-focus) serving the R&D needs of South Africa, Africa and Southern Hemisphere.

### DWIK facility for fast neutrons: South Africa

By Chris Franklyn ([franklyn@necsa.co.za](mailto:franklyn@necsa.co.za))

Necsa and iThembaLABS have been participating with a large South African mining company in the development of an advanced accelerator based neutron generator for use in mineralogical radiographic imaging. After considerable capital investment, priorities changed in the mining company and a decision taken recently to terminate the project. Due to Necsa and iThembaLABS' close involvement, the company offered the use of the facilities to the collaborators. Necsa is now in possession of two advanced accelerator systems, as well as fast neutron imaging systems. Due to the unique nature of the accelerator systems, quasi-monoenergetic neutrons from 2.5 to 8 MeV can be generated with an intensity of the order of  $10^{11}$  neutrons per second emitted primarily in a 30 degree cone. The Necsa/iThembaLABS collaboration intends to utilize the facilities for R&D purposes, driven primarily by South African higher education institutions. Research projects in collaboration with international institutes will also be encouraged and this short report serves as an invitation to interested persons to contact the author for further details.

### Call for hosts for WCNR-10 and ITMNR-7

Institutions being interested and willing to host WCNR-10 in 2014 and ITMNR-7 in 2012, respectively, should send their expression of interest to the secretary of ISNR ([thomas.buecherl@radiochemie.de](mailto:thomas.buecherl@radiochemie.de)).



*Some participants of NEUWAVE-1 during their mountain hike to the Wallberg close to the summit ...*

### NEUWAVE-1

by Eberhard Lehmann

For the first time, a meeting was held outside the "normal" sequence of conferences in neutron imaging for a dedicated topic gaining such high interest and participation. During 3 ½ days, about 40 leading experts from 9 countries all over the world exchanged their knowledge about two promising topics: Energy-dependent Imaging with cold neutrons and the progress in fast neutron imaging. A new format was successfully applied for the first time, with the number of talks very limited but with plenty of time for vivid discussion.



*... and relaxing after arriving at the mountain top restaurant.*



*Photography of the participants of the NEUWAVE-1 workshop. In the background the FRM I, the famous "atomic egg" (FRM I), is visible.*

The research neutron source "Heinz Maier-Leibnitz (FRM II)" of Technische Universität München was chosen as conference site due to its expertise in both fields with its facilities ANTARES (cold neutron imaging) and NECTAR (fast neutron imaging). This activity was supported by the European network NMI3 ([http://neutron.neutron-eu.net/n\\_nmi3](http://neutron.neutron-eu.net/n_nmi3)).

During this meeting it became obvious that the new approach to do transmission imaging measurements with narrow energy bands of the applied neutron spectrum will enable a new field of material research and material characterization with cold neutrons. The number of facilities presently available for such kind of studies is very limited (about 5 worldwide). Consequently the presented results just give a first glance on future perspectives of the method.

It was demonstrated that the scattering behavior of most metallic materials for cold neutrons is characterized by the Bragg edges in the cross-section data due to diffractions at the lattices of the micro-crystallites. Depending on the neutron wavelength and the material properties, either the structural parameter of the material can be derived from transmission data, or local textures can be visualized in high spatial resolution. First impressive results of such imaging studies were presented.

These findings have direct impact on the decisions to go ahead to install also beam lines for neutron imaging at the upcoming new spallation neutron sources (ISIS-TS2, SNS, J-PARC, ESS-S). The pulse structure at these strong neutron sources is extremely promising for energy selective imaging, using the Time Of Flight (TOF) technique with high performance in respect to energy reso-

lution and pulse intensity. The intense pulses can also be used for stroboscopic imaging of fast processes.

Currently, all four spallation sources are on different levels of consideration in respect to the installation of imaging facilities.

At ISIS-Target Station 2 (TS2), a project named IMAT is on the way for material research applications as extension and complement to activities at ENGINE-X. The goal is a setup which combines the imaging capability with a diffraction device for texture and stress analysis.

SNS is on a good way to reach the power of ISIS soon and will go beyond. Therefore, a real competition for the remaining beam ports at this source is expected. It will be necessary to apply for such a beam line option at the meeting of the Scientific Committee foreseen to be held in October 2008 with a Letter of Intent. A combination with a scattering device, e.g. a miniaturized SANS, was considered, which would strengthen the scientific impact of the proposal.

J-PARC will start operation during 2008 and commence user operation at the end of the year. The proposal system will start in Summer 2008. An elaborate universal test beam line is about to be completed for the start of user operation, which incorporates nearly all installations necessary for neutron imaging. Test measurements for imaging will be performed soon after commissioning in order to make a forecast for the future performance of a dedicated installation and to underline the layout design with realistic data.

ESS-S will have (if agreed) a strong intended link to industry, where neutron imaging will certainly play an important role. Although it is too early to make direct considerations in respect to design and layout of such an installation, ESS-S can take profit from the progress and the experience at the other sources mentioned above.

Beside these very important considerations about the future imaging capabilities at pulsed spallation sources, interesting new results in neutron imaging were presented. This was in particular about imaging with polarized neutrons for magnetic field and structure determination, phase contrast imaging, new set-up for fuel cell research and options for high resolution neutron imaging detectors. It became also clear that imaging and scattering methods will be more and more integrated and combined in future experiments.

The meeting was concluded with the explicit aim of the participants to continue the approaches and discussion in a follow-up event (NEUWAVE 2) to be held at one of the four sites of the pulsed spallation sources. The final decision about site, timing and content will be taken by latest at the ITMNR-6 meeting in Kobe (Japan), September 2008, (<http://www.org.kobe-u.ac.jp/itmnr-6/>).

## New members

In this section we will make you familiar with new members of ISNR and their activities in the field of NR.

### *Fareeha Hameed, Austria*

"I have been working with neutron radiography and tomography to investigate the penetration of stone strengtheners in building stones. St. Stephan's Cathedral, one of the most important high and late Gothic buildings in Central Europe, is a landmark of Vienna. The restoration of its facade, composed of different calcareous arenites, is a continuous challenge due to erosion, air pollution and the decomposition faced over the passage of time. An expensive and disputed technique is the extensive use of stone consolidants and impregnation agents to make the surface more corrosion resistant. For an assessment of the sustainability of the applied restoration procedures several stones have been drilled from weather-

exposed locations of the facade. Neutron radiography and tomography investigations, assisted by other inspection methods, have been performed to analyze the penetration depth and dispersion of the restoration agents. The neutron method has been confirmed to be very useful for a fast assessment of the effectiveness and sustainability of the restoration process.

I am also updating the neutron radiography and tomography facility at Atom-institut. We are trying to perform digital neutron imaging with a high resolution at a low power research reactor. The resolution is being improved by setting up a new scintillator. An imaging plate detector is being used to perform high resolution neutron radiography.

I am also working at imaging and transmission analysis of boron alloyed steels which are used in nuclear engineering as neutron shielding for radioactive waste disposal equipment."

#### **Reynaldo Pugliesi, Brazil**

"Actual work: Development and application of the NR technique by using: Conventional X-ray films, Track-etch foils; Real time systems. Development of the neutron induced radiation (proton, alpha, electron) radiography technique.

Two PhD thesis are under advising.

Publications:

F. Pugliesi; V Sciani; MAS Pereira; R.Pugliesi; Digital system to characterize solid state nuclear track detectors. Brazilian Journal of Physics; submitted in Feb/2007 and accepted for publication in April/2007.

R.Pugliesi; MLG Andrade; MaS Pereira; F. Pugliesi. Chap.5 of the book:XIV summer school in Experimental Nuclear Physics, Jorge Andre Swieca; São Paulo IPEN 13-24/Fev/2006. Fundamentals of the Neutron Radiography technique.

V.Sciani, F.Pugliesi, M.A.Stanojev Pereira, R. Pugliesi. Digital system for track - etch neutron radiography. XXVII Meeting for Nuclear Physics in Brazil; 07-11/09/2005 Guarujá/SP - awarded as the best paper presented in the poster section.

R.Pugliesi; E.Lehmann. Neutron Induced Electron Radiography using an Image Plate. Applied Radiation and Isotopes;vol62(3); 457-460; 2005

R.Pugliesi; MLG Andrade; MaS Pereira; F. Pugliesi. Neutron Induced electron Radiography. 5 International Topical Meeting on Neutron Radiography. Max Planck Institute; 07/2004. Nuc Instruments and Methods - A ; 542/1-3 pp. 81-86, 2005

R.Pugliesi. New radiographic images from old neutron converter screens. Meeting of the IAEA:"Development of improved sources and Imaging systems for Neutron Radiography. Hann Meitner Institute West Germany, 07/2004

R. Pugliesi. "Neutron radiography activities at IPEN and proposed work plan on Neutron Induced Radiation Radiography". Meeting of the IAEA:"Development of improved sources and Imaging systems for Neutron Radiography. Vienna, 07/2003.

R. Pugliesi; Marco A.Stanojev Pereira. Evaluation of the Sensitivity for the track-etch neutron radiography method. Radiation Measurements 37/2, pp 109-112, 2003

M.O Menezes; R.Pugliesi; M.L.G.Andrade; M.S.Pereira. Real-time neutron radiography at IPEN-CNEN/SP. Brazilian Journal of Physics, vol.33 no.2 pp 282-285, june 2003

Future plan: Install a neutron tomography system in our NR facility"

#### **Abdul Aziz Mohamed, Malaysia**

"My interest is mainly to use neutron beam for materials science and engineering. Currently, my neutron works, all

aspects (usages, instrumentations, analysis), are on radiography, scattering (small angle and neutron diffraction), prnaa, transmutation doping and modelling MCNP/SAND.

Currently chief investigator for IAEA project neutron beam research (SANS) and member of project Advanced Neutron Radiography.

Major experience:

5 months at Japan Atomic Energy Research Inst. working on neutron radiography, 1992 10 days R&D attachment at SANS facility at Indonesian Reactor, 2000, 2003, 2005 Guest researcher at NIST Neutron Beam Centre for SANS 2 weeks 2001 (counter part Dr C. J. Glinka)"

Abdul Aziz Mohamed is also an IAEA-level III NDT personnel for 5 methods.

**Naeem M. Abdurrahman, USA**

"Work in Neutron Radiography:

Developed 2 major experimental research facilities: An advanced neutron imaging facility for neutron radiography and computed neutron tomography. The imaging facility uses the university research reactor to provide the intense neutron source. The other facility is a graphite slowing down time spectrometer for nuclear materials characterization. The graphite spectrometer facility employs a pulsed DT neutron generator. In the development of both facilities we relied heavily on Monte Carlo for the system design and optimization, analysis, and simulations. These projects were funded by the NFS and DOE respectively.

Developed image reconstruction, restoration, and enhancements algorithms and methods for neutron computed tomography and other tomographic modalities. The image restoration and enhancement research focused on the problem of removing the image blurring caused by neutron scattering inside the object.

We employed elaborate mathematical analysis, Monte Carlo simulations, and artificial neural networks to address the scattering correction and image deblurring. This project was funded by the NSF.

Publications and Presentations in Neutron Radiography:

1. M. S. Abdelrahman and N. M. Abdurrahman, Imaging Automation and Volume Tomographic Visualization at Texas Neutron Imaging Facility, Trans. Am. Nucl. Soc., 81, 120-121 (1999).
2. Y. G. Jo, N. M. Abdurrahman and M. S. Abdelrahman, New Thermal Neutron Imaging Facility at The University of Texas Reactor, Trans. Am. Nucl. Soc., 80, 84-85 (1999).
3. N. M. Abdurrahman, Y. G. Jo and M. S. Abdelrahman, Demonstration of Neutron Radiography and Computed Tomography at The University of Texas Thermal Neutron Imaging Facility, Trans. Am. Nucl. Soc., 80, 85-87 (1999).
4. N. M. Abdurrahman, Y. G. Jo, W. J. Spiesman, and T. L. Bauer, Verification of MCNP Model for the University of Texas TRIGA Reactor, Trans. Am. Nucl. Soc., 77, 132-134 (1997).
5. Y. G. Jo, N. M. Abdurrahman, B. W. Wehring, Design of a Neutron Radiography Collimator System in a Through Beam Port at Triga Reactor, Trans. Am. Nucl. Soc., 75, 113-114 (1996).
6. N. M. Abdurrahman and B. W. Wehring, "Neutron Imaging System for Neutron Radiography, Tomography, and Beam Diagnostics," Trans. Am. Nucl. Soc., 73, 154-155 (1995).
7. Y. G. Jo M. A. Abdelrahman and N. M. Abdurrahman, Nondestructive Evaluation of Aluminum Honeycomb Structures Using Thermal Neutron Radiography, Proc. 2000 NSF Design and Manufacturing Research Conference (2000)
8. Y. G. Jo, M. S. Abdelrahman, and N. M. Abdurrahman, Selective Nondestructive Evaluation Applications of Ther-

mal Neutron Imaging, Proc. 8th International Conference on Nuclear Engineering, American Society of Mechanical Engineers, New York, NY (2000)

9. Y. G. Jo and N. M. Abdurrahman, The Effect of Moderating Piece Inside a Neutron Collimator on Neutron Dose Around Neutron Imaging Facility, Proc. 1998 Radiation and Shielding Division Topical Conference: Technologies for the New Century, American Nuclear Society, Vol. I, pp. 11-117 (1998).

10. N. M. Abdurrahman, B. W. Wehring, T. L. Bauer, Y. G. Jo, Development of Neutron Imaging System for Real Time Neutron Radiography and Neutron Computed Tomography at The University of Texas Triga Reactor, Proc. 5th World Conf. Neutron Radiography, Deutsche Gesellschaft für Zerstrahlungsfreie Prüfung, pp. 222-228 (1997)

11. Y. D. Lee, N. M. Abdurrahman, R. C. Block, and R. E. Slovacek, Neutron Emission Tomography for Nuclear Fissile Materials Safeguards, Proc. 5th Int. Conf. Facility Operations-Safeguards Interface, pp. 200-204 (1996).

12. New Thermal Neutron Imaging Facility at The University of Texas Triga Reactor, 9th Symposium on Radiation Measurements & Applications, Ann Arbor, MI, 1998."

**Md. Khurshed Alam, Bangladesh**

**Md. N. Islam, Bangladesh**

I am working as group leader in the field of neutron radiography at the institute of nuclear Science and Technology, Bangladesh Atomic Energy Commission.

Publications:

1. M. N. Islam, M. M. Rahman, S.M.A. Islam & M. A. Zaman, Neutron radiographic investigation of the quality of some rubber samples, Indian Journal of Pure and Applied Physics, Vol. 38 (Sept. 2000) pp-675.

2. M. N. Islam, M. A. Saklayen, M. K. Alam, M. A. Zaman & M. H. Ahsan, Study of corrosion in aluminium using neutron radiography technique, Indian Journal of Pure and Applied Physics, Vol. 38 (Sept. 2000) pp-670.

3. M. N. Islam, M. K. Alam, M. A. Zaman, M. H. Ahsan & N. I. Molla, Application of neutron radiography to building industries, Indian Journal of Pure and Applied Physics, Vol. 38 (May 2000) pp-348.

4. M. N. Islam, M. M. Ahasan, M. K. Alam, M. S. Uddin & M. Zaman, Measurements of D<sub>2</sub>O - concentration in D<sub>2</sub>O - H<sub>2</sub>O mixture using neutron radiography technique, Indian Journal of Pure and Applied Physics, Vol. 41 (Aug.2003) pp-593.

5. M. N. Islam, Mubarak A. Khan, M. K. Alam, M. A. Zaman & M. Matsubayashi, Study of water absorption behavior in wood plastic composites by using neutron radiography techniques, Journal of Polymer & Plastic Technology and Engineering, Vol. 42, Issue 5 (2003) pp-923.

6. M. S. Uddin, R. U. Miah, Sk. A. Latif, M. N. Islam, M. R. Zaman and N. I. Molla, Excitation functions of (n,p) and (n,f $\tilde{N}$ ) reactions on the isotopes of Vanadium and Cobalt in the neutron energy range of 13.57 - 14.71 MeV, Indian Journal of Pure and Applied Physics, Vol. 39 (Aug.2001) pp-487.

7. M. S. Uddin, Sk. A. Latif, M. A. Halim, M. N. Islam, R. U. Miah, N. I. Molla & M. R. Zaman, Measurement of (n,2n) reaction cross sections on the isotopes of Zinc, Germanium and Scandium in the neutron energy range of 13.82-14.71 MeV, Indian Journal of Pure and Applied Physics, Vol. 40 (Aug. 2002) pp-533.

8. M. K. Alam, M. N. Islam, M. A. Zaman and M. Y. Ali, Optical model studies for elastic scattering of protons, Indian Journal of Physics, Vol. 77A, No. 3 (May 2003) pp-261.

9. Sk. A. Latif, M. A. Halim, M. S. Uddin, K. Naher, M. N. Islam, F. U. Ahmed, M. A. Islam, D. Afroj, Y. Oura, M. Ebihara, & M. Katada, Determination of toxic trace elements in soils and sediments of Bangladesh using Instrumental Neutron Activation Analysis (INAA), *Journal of Nuclear and Radiochemical Sciences*, Vol. 4 (2003) pp-51.

10. M. N. Islam, Mubarak A. Khan and M. A. Zaman, Comparative study of water absorption behavior of wood and wood plastic composites of Simul using film neutron radiography, Accepted for publication in the *Journal of Polymer & Plastic Technology and Engineering, USA*."

**Toufik Zergoug, Algeria**

Participant of WCNR-8

**Ouardi Afa Afaf, Morocco**

"Neutron Radiography is one of main applications that we project to install in CENM (around the search reactor Triga Mark II), which will be dedicated to the industrial investigation especially for aeronautic industry. The actual work is dedicated to the simulation of the assembly that assure the collimation by using a combination of the GEANT 4 code and FLUKA code from the CERN, based on Monte Carlo method. A general study about the choice of irradiation canal (tagentiel canal and the termal column), Casemate and system detection is done. Our future plan consists to:

- Installation of collimator
- Installation of the casemate
- Installation of the system detection (combination scintillator-camera CCD)
- Define the procedures
- Tests"

**Hans-Ulrich Mast, Germany**

"I retired three years ago, but I was a founding member of the ISNR in 1996 and a member of the first board, having attended 5 world conferences before. I should like to keep in touch with the community."

**Mabuti Jacob Radebe, South Africa,**

"I am a newly appointed scientist who is part of the Radiography/Tomography team at Necsa. Currently we plan and co-ordinate the utilization of the current neutron radiography (SANRAD) facility. My MSc-research work (completed June 2007) conducted under the supervision of Mr. F. C. de Beer, on the investigation of Ferro corrosion within steel reinforced concrete samples, was centered on radiography and tomography application. My day to day work involves conduction and support of institutional research; as well as the support of commercial quality assurance activities through radiography and tomography imaging.

I have not yet published any work but working on one.

The future plans of the radiography and tomography section is to upgrade the current radiography and tomography facility to a centre for radiography and tomography that will host neutron-, x-ray- and gamma ray penetrating radiation based imaging infrastructures that can be utilized by researchers from industry as well as post graduate students from higher educational institutions."

**Dates**

14. - 18. September 2008, ITMNR-6, Kobe, Japan.

03. -08. September 2010, WCNR-9, South Africa.