IUVSTA Workshop on
MODERN TRENDS IN MICROSCOPY
May 24 - 26, 2016

Venue: National Institute of Vacuum Science & Technology
Islamabad-Pakistan

Workshop Chair: **Prof. Dr. Javaid Ahsan Bhatti, President, PVS**

Workshop Coordinator: **Prof. Dr. M. Khalid Alamgir.**

REPORT

IUVSTA – Short Technical Training Course on

MODERN TRENDS IN MICROSCOPY

Islamabad - Pakistan

The past century has been host to many technological advancements resulting in gradual progression towards the betterment of society. Vacuum Science and Technology as such has been a vital force behind this advancement. The increasing use of microscopy as an essential tool for materials science necessitates a sharing of expertise within the country. So the training in this important area of science and technology is of prime importance in Pakistan. Realizing this fact, Pakistan Vacuum Society (PVS) arranged a 3-day shot technical training course entitled as "IUVSTA - Workshop on Modern Trends in Microscopy" at National Institute of Vacuum Science & Technology (NINVAST), Islamabad from May 24 – 26, 2016. PVS organized this course with patronage and financial support of International Union for Vacuum Science, Technique and Applications (IUVSTA) and NINVAST. The workshop was officially inaugurated by Dr. Javaid Ahsan Bhatti, President PVS.

This was a forward-looking workshop, aimed at strengthening the capacity of people working in or related to field of microscopy. The course was designed to assist specially the surface and material scientists, researchers, engineers, university professors, industry people and technicians utilizing the surface analyzing and characterization techniques at various levels. This course provided a golden opportunity to the young researchers and technicians for interaction with eminent scientists and specialists working in the field of surface & material science, particularly microscopy. The workshop greatly helped in enhancing the capability and expertise in the fields of failure analysis and material characterization at the micro & nano levels.

The main objectives of the training course were to:

- Provide the basic and advance knowledge about surface science & engineering and its applications in the modern and applied fields of research and production engineering.
- Cope with the latest trends, applications and future role of the microscopy in the latest research and industrial applications.
- Explore the new developments of microscopy (OM, SEM, TEM, AFM, STM etc.) in instrumentation, techniques and applications in the material and life sciences.
- Enhance collaborative research and development activities among various industries, research organizations and universities of Pakistan.

This workshop provided an excellent opportunity to the participants to exchange views and to adapt appropriate methodologies to cope with the latest trends, applications and future role of microscopy in the latest research and industrial applications. This short course has definitely enhanced the knowledge, skill and understanding of basic physical processes / concepts. The practical demonstrations and exhibition of various equipments has further enhanced the knowledge of the participants. The personal interactions between the course participants and instructors will help in developing the coordination and assist in collaborative research programs

A total of 84 participants were registered for participation in this training course from all over Pakistan. These include; 12 from industries, 18 from research organizations and 54 from universities. The prominent experts from a variety of scientific, research and technical organizations of the country delivered technical talks and shared their expertise on the following topics:

- Importance of Vacuum in Microscopy
- Vacuum Physics Fundamentals
- Vacuum Generation & Measurement Systems in Microscopy
- Optical Microscopy
- Recurrence Tracking Microscopy
- Electron Microscopy with focus on SEM & AES
- Ion Beam Analysis
- Industrial Vacuum System Design
- LEED Characterization Technique
- Materials Characterization by XPS
- Fundamentals of AFM for Surface analysis
- Failure Analysis
- Nanotechnology for Microscopy Systems
- Laser & Microscopy
- Live Cell Imaging

To further enhance the concepts of workshop participants about microscopy, practical demonstrations on XPS, PIXE and Rutherford backscattering (RBS) were arranged. The participants also had a technical tour of accelerator labs at National Centre of Physics (NCP), Islamabad as well as research facilities of NINVAST. The relevant literature and handouts were distributed to the participants for their reference and further course of action. All participants took keen interest in all the sessions of this training course and acknowledged the efforts of IUVSTA in financially supporting a very productive and successful event which enhanced their knowledge and understanding of the basic physical processes and concepts relevant to microscopy. The evaluation of the participants indicated that the workshop was successful. To a large extend the objectives of the workshop and expectations of participants were met. The experiences, skills, knowledge and interactive mode of presentation made facilitation friendly and lively. It was recommended that such types of training may be conducted frequently so that researchers, industrialist and the educationist may get due benefits. PVS provided accommodation at economical rates to all the deserving participants of the workshop. Financial assistance was provided to a number of technicians, PhD and M Phil students out of the financial grant from IUVSTA.

At the end, Prof, Dr. Hafeez Hoorani, Director General, National Centre for Physics, awarded certificates to the participants.

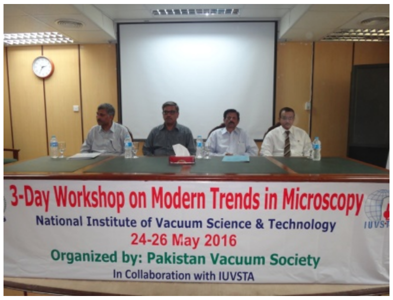
PVS wishes to express it gratitude to NINVAST and IUVSTA for their entire support assistance in the successful completion of this workshop.

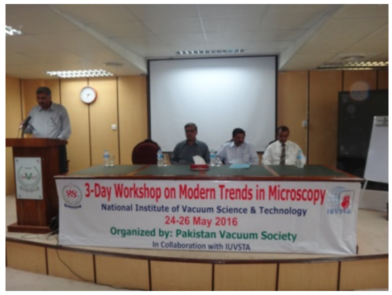
Faculty of the workshop:

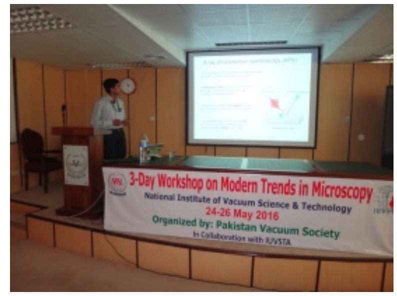
- Prof. Dr. Syed Wilayat Husain, Institute of Space Technology, Islamabad.
- Prof. Dr. Asghari Maqsood, Air University, Islamabad.
- Prof. Dr. Shahid Nisar, NINVAST, Islamabad.
- Prof. Dr. Javaid Ahsan Bhatti, PVS, Islamabad.
- Prof. Dr. Haji M. Akram, NINVAST, Islamabad.
- Prof. Dr. Muhammad Ismael, National Centre for Physics, Islamabad.
- Prof. Dr. Talib Hussain, NINVAST, Islamabad.
- Prof. Dr. Amjad Ali, Swan Technologies, Islamabad.
- Prof. Dr. Suleman Qaiser, PVS, Islamabad.
- Prof. Dr. Ajmal H. Hamdani, Pakistan Institute of Lasers and Optics, Rawalpindi.
- Prof. Dr. Muhammad Sultan, National Centre for Physics, Islamabad.
- Prof. Dr. Khalid Alamgir, NINVAST, Islamabad.
- Prof. Dr. Farhan Saif, National University of Science and Technology (NUST), Islamabad.
- Prof. Dr. Wali Muhammad, Quaid-e-Azam University, Islamabad.
- Mr. Mirza Suhail Baig, NINVAST, Islamabad.

Glimpses of the closing ceremony of the

Short Technical Training Course / Workshop





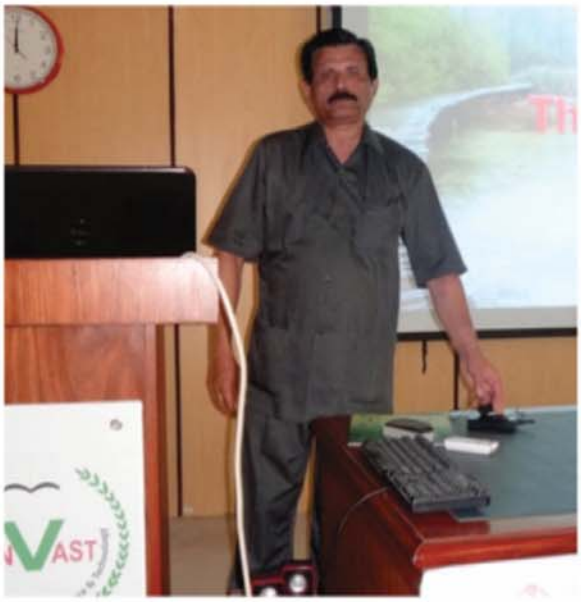


Glimpses of the short technical training course / workshop

Participants attending the lecture sessions

A group of participants with the Chief Guest Prof. Dr. Hafeez Hoorani

FOCAL PERSONS



Dr. Talib Hussain

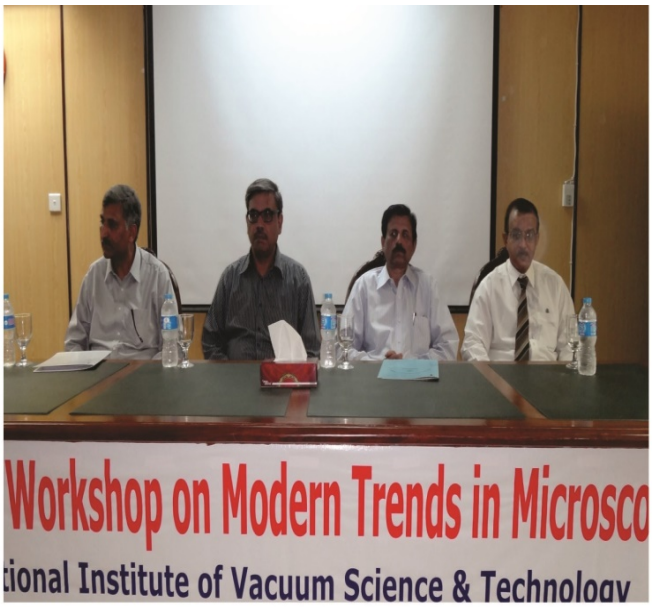
Dr. M. Khalid Alamgir

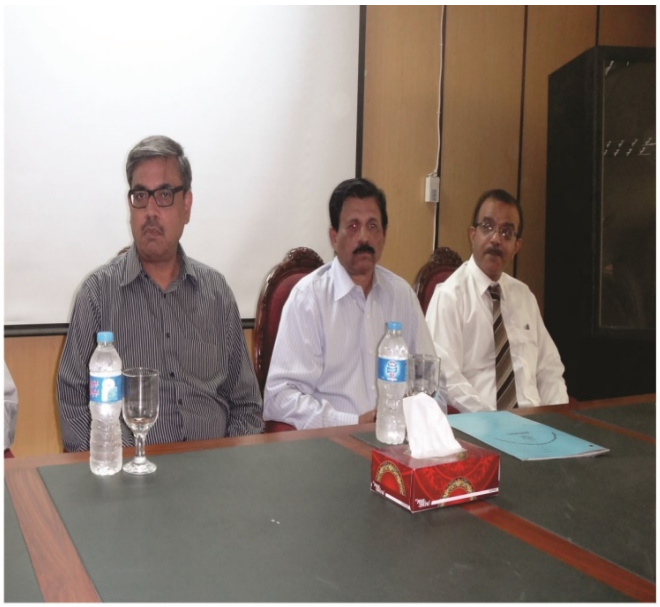
Dr. Javaid Ahsan Bhatti

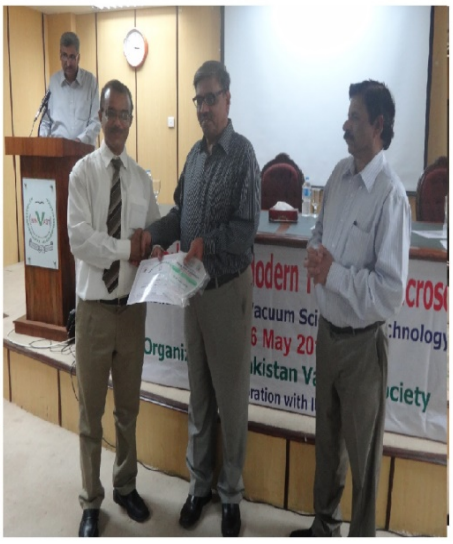
Mr. Wali Muhammad

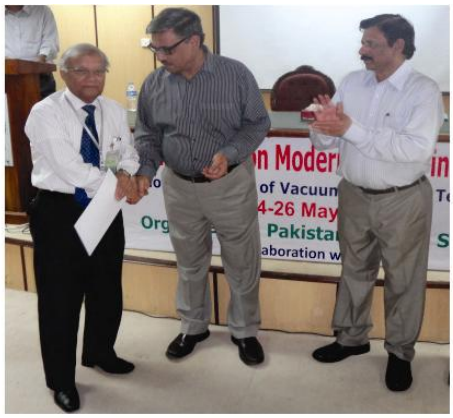
Some of the speakers / presenters of the workshop

Glimpses of the certificates awarding ceremony

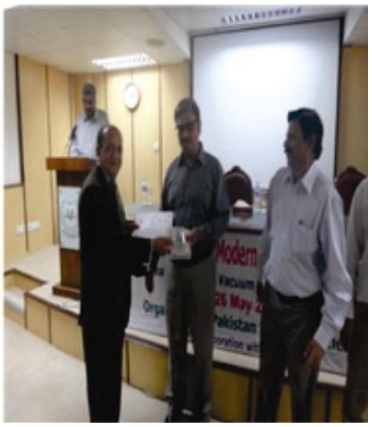










Feedback from the participants

- The workshop was well organized.
- Environment of workshop was conducive to learning.
- Objective of workshop was according to the requirements of the participants and met the purpose successfully.
- Content of the workshop was according to the workshop objectives.
- The workshop progressed in a logical order.
- Number of days were insufficient for the workshop
- Sessions enhanced the knowledge and skills of the participants.
- Time allocation for various segments was appropriate

Utilization of IUVSTA grant

The management and organizers of the workshop / short technical training course are highly grateful to the IUVSTA fir generous financial support to PVS.

PVS received US$ 2812 from IUVSTA (After conversion from actual amount of Euro 2500). PVS formed an internal committee to select the deserving applicants out of total 84 participants to properly utilize the grant as per IUVSTA rules and regulations. The list of the selected participants and the amount of paid out of the IUVSTA grant in the relevant heads is enclosed as an attachment.

The break-up of the usage is as under:

Total number of participants: 84
IUVSTA financial assistance provided: 38 (List attached)

Amount received: US$: 2812
Amount utilized: US$: 2812

Report is hereby submitted to the IUVSTA grants committee for approval.

Dr. Javaid Ahsan Bhatti
President, Pakistan Vacuum Society
Islamabad-Pakistan

IUVSTA Grant - List of Participants
Workshop on Modern trends in Microscopy
24 - 26 May 2016

S. #	Name	Institution	Registration Fee US $	Travel Road / Air US $	Boarding / Lodging US $	Total US $
20.	Ms. Nosheen Ayub	Fatima Jinah Women Univ., Rawalpindi	48	Nil	14	62
21.	Ms. Sana Zulfiqar	Fatima Jinah Women Univ., Rawalpindi	48	Nil	14	62
22.	Ms. Kousar Parveen	Fatima Jinah Women Univ., Rawalpindi	48	Nil	14	62
23.	Mr. M. Shahzad Saeed	University of Agriculture, Faisalabad	48	30	26	104
24.	Mr. Abdul Ahad	University of Agriculture, Peshawar	48	Nil	26	74
25.	Mr. Said Sajjad Ali	University of Agriculture, Peshawar	48	Nil	26	74
26.	Mr. Ghalib Hussain	University of Poonch, AJK	48	28	26	102
27.	Mr. Mehmood Ahmad	University of Poonch, AJK	48	28	26	102
28.	Mr. Ghulam Mustafa	University of Poonch, AJK	48	28	26	102
29.	Ms. Madiha Basit	GC University, Faisalabad	48	Nil	14	62
30.	Mr. Muhammad Ijaz	GC University, Faisalabad	48	Nil	14	62
31.	Mr. Faisal Ahmed	GC University, Faisalabad	48	30	26	104
32.	Mr. Ihtisham-ul-Haq	NIFST, Faisalabad	48	Nil	14	62
33.	Mr. Hamid Khan	Kohat Univ. of Science & Technol., Kohat	48	21	26	95
34.	Mr. Jawad Ali	Hazara University, Mansehra	48	Nil	14	62
35.	Mr. K. Imtiaz Ullah	Hazara University, Mansehra	48	Nil	14	62
36.	Ms. Uzma Khan	Hazara University, Mansehra	48	12	14	74
37.	Ms. Hira Iftikhar	Agriculture University, Faisalabad	48	Nil	14	62
38.	Ms. Bushra Bari	Islamia University, Bahawalpur	48	45	26	119
		Total	1824	312	676	2812

Member
(Dr. M. Rafiqu)

Member
(M. Tariq Sultan)

Head
(Dr. Ahmad Yar)

President PVS
(Dr. Javaid Ahsan Athar)