

News

Number 13, J



Marie Curie: You cannot hope to build a better world without improving the individuals. To that end, each of us must work for our own improvement and, at the same time, share a general responsibility for all humanity, our particular duty being to aid those to whom we think we can be most useful.

Albert Einstein: The important point is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when he contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery every day. Never lose a holy curiosity.



Latest News

Attending two conferences and one international exhibition

Dr. Eskandar Keshavarz Alamdari (MERC deputy of research) travelled abroad to take part in the **9th International Symposium of Smart Measurement Technology** held in Russia from 29th June to 2nd July and **ICHM 2009 Conference** held in China from 6th July to 10th July. Dr. Mohammad Reza Vaezi (chancellor's office manager) and Dr. Mohammad Amini (the acting deputy of New Materials department) traveled to Tajikistan to set up the MERC booth in the **International Unex Exhibition** held from 6th to 9th of July 2009 in Dushanbeh.

Workshop on Scopus and Science Direct

Mr. Jalali, the representative in Iran of Elsevier held a workshop on Scopus and Science Direct Databanks on Saturday June 13, 2009 at Shaheed Bayat Auditorium.

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Doctoral Program Admission

Materials and Energy Research Center (MERC) admits PhD students in the field of Materials Science and Engineering for the academic year 2009-2010.

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Call for International Khwarizmi Award

Aiming to introduce the pioneers in the fields of science, research, innovation and technology, Khwarizmi award is offered each year. In the same line, the 23rd Khwarizmi Award Ceremony will be held during the 10-day celebration of Islamic Revolution Anniversary by attendance of home and foreign researchers, innovators and inventors in presence of the President of I.R. of Iran. For further information, interested individuals can visit the official website at the following address www.khwarizmi.ir.

Partou Omid Multi-purpose Cooperation Society

The first annual general meeting of Partou Omid (Ray of Hope) Multi-purpose Cooperation Society was held on the 1st of June at Shaheed Mofateh Auditorium. The board of directors' report of land purchase at Roudehen, the inspector's report on the performance of the board of the directors after their election and the auditor's report on the preceding fiscal year were the reports presented at the meeting. In the same meeting, Mr. Hassanzadeh was designated as the new inspector for the new fiscal year.

International Astronomy Year in I.R. Iran

Based on the resolution of UN General Assembly declaring the 2009 as the year of international astronomy and in order to re-introduce the ancient civilization of Iran especially its contributions in the field of astronomy, the

New Materials Research Depa

Wonderful developments in different scientific branches in the world have opened new perspectives of science and technology. Meanwhile, new trends of interdisciplinary fields and methods of producing new materials and advanced metals have obtained special position. As a result of these developments, many scientists and researchers have focused their attention on these new fields in the past decade.

Considering its activities, facilities and modern equipments in line with the realization of the 5-year plan objectives the outlines of which were ratified in the session of the board of trustees held on 12/05/2006 and in order to boost interdisciplinary activities, MERC

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Reestablishment of Renewa



Park of the new energies (Solar Site of Energy Department) which was inaugurated in 1985 was a 47.7 long and 45.6 m wide building consisting of: 1- solar house, 2- semi-industrial dryer, 3- wind turbines, 4- solar concentrators, 5- mobile dryer of farming products and 6- solar desalination system.

This site served two main purposes namely as the research facility No.

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Scientific Presentations

1. In 22th of April 2009, Dr. Yashar Azizian gave a lecture on "the study of the production technology and the growth processes in the semi-conductor nano-crystal of sulfide cadmium". The lecture covered issues such as the physical properties of nano particles of semi-conductor sulfide cadmium, the general production methods and the examination of nano structures, semi-conductor nano-crystals, semi-crystal nano composites used in optical-electronic industries and also the manipulation of band gap through the change in the particles size. The lecture mainly focused on the cheap, simple and effective technologies for the production of semi-conductor nano materials.

2. In 29th of April 2009, Dr. Mir Mahdi Zahedi had a lecture on "Separation and determination of nanoparticles manufactured by FSLM method". Considering the widespread studies of nanoparticles productions, several points need to be taken into account 1- the continuous production of nanoparticles 2- production of homogenous particles in the process and 3- the presence of isolation system considering the environmental interferences in the nano dimensions. The FSLM method, which is a separation method of injection into the current, is to some extent capable of fulfilling the above-objectives. On the other hand, for the analysis of production process, we need suitable methods to be matched with the continuous method, which is generally accomplished through microscopic methods costing from \$30,000 to 300,000. In this seminar, by introducing the analysis of asymmetric current, its unique features of this method like instrumentation, and methodology needed for the analysis were discussed.

3. In 2nd of May 2009, Mr. Ahmad Reza Fadaeean gave a lecture on "the application of double-pulse technique in the analysis, identification, alloying and optimization of materials". In order to get the optimal conditions of the laser radiations on the changes of surface parameters of the laser ablation ($\lambda = 1064 \text{ nm}$, $q \approx 5-7.10^{10} \text{ W/cm}^2$) as single and double pulse on the surface of aluminum alloy plate in the air. In the experiment, by delaying the second pulse time (0-70 μs) the impact of laser radiation on the alloys was examined and the advantage of second pulse from both time and economic point of view were proved. By making use of double-pulse laser, a method will be available for the qualitative and quantitative analysis of chemicals, which also can be used for the analysis of individual strata (layers) of very thin film. This method enables the analysis of very low concentration materials of about $\%10^{-7}$ for elements such Ti, Cu, Al, Ca, Mg, Na ... on alloys and biological samples like meat, blood and hair. This method also enables the determination of the type and the concentration of elements present in the constituent strata (layers) of very thin covers – several micrometers-. 24 layers of a cover of 1 μm thickness were analyzed by means of double-pulse laser.

4. In the same day, Dr. Mansoureh Ganjali gave a lecture entitled "Foundation of Double-pulse Laser Ablation". In this seminar, she elaborated on the melting and evaporation (ablation) of materials by pulse laser. She then compared the advantages of double pulse over single pulse. Manipulating the wavelength, energy, size of the sample, causes the material pulse to behave differently. In this seminar, the limitations of single laser were also described some of which includes: pressing need for high intensity, the application of a pulse hundreds of times stronger than double pulse, longer studies of the materials compared with double pulse method. Making use of double-pulse technique in the ablation, the first and second pulse with similar optical properties and time difference of

The chancellor of Semnan University elaborated on time management *this cliché several times a day. Have you ever thought out whatever we like? A comparison in Iran is four times higher than Iranians consume 70% more of time. He knows how time is managed and care about time and its appropriate management can create significant results. Time is in fact our life which needs to be used and efficient person in the corner of the most important of which is in close connection with each other. It is an important step towards the increase of real value. It is the negligence of no plan in his life.*

Causes leading to waste of time are in three categories: Generally, the internal causes is much more than external causes.

Solutions available to reduce waste of time

Internal factors
1. Lack of prioritization of works and lack of works plan
2. Lack of a program and ambitious objectives
3. Work postponement
4. Lack of sufficient skill and management
5. Untidiness and disarrangement of office

A: Doing works in accordance with the plan
A person should devote a minimum of 15 minutes to prepare list of works to be done in a day. The works should be categorized as: A; showing urgent, ordinary and important works. The works should be performed first of all. Imam Musa Kazem (p.b.u.h) said: "Who does significant jobs".

B: The recognition of crucial times
A physiologist at Chicago University found that the body temperature increases or decreases one's ability and productivity. The body temperature is higher in the early mornings and mid afternoon. At these hours; most people perform their most important works requiring alertness and high ability while the other works should be done during the time interval when the body temperature is lower.

C: Not postponing the works
Leaving a work incomplete and not finishing the completion of a work makes a



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Articles

Secretariat of Statistics and Performance Assessment

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In order to update the statistics, Dr. Monireh Ganjali, the secretary of the Statistics and Performance Assessment Committee offered her proposal to the MERC's Board of Directors in 27.6.2009.

Everybody knows the increasing role of statistics as an overall prerequisite for all decisions and policymaking and planning activities. In the age of information technology, this role is so obvious that the statistic system of countries and the quality and size of their databanks not only is regarded as an index of development, but also determines their socio-cultural and economical policies and plans.

By activating the secretariat of the Performance Assessment Committee of the MERC, we can obtain a clear picture of the faculty members' academic activities, their annual paper contributions, their participation in research projects, etc. Doing so, the possible shortcomings will be known and MERC can make plans to keep its researchers up to date. On the other hand, the secretariat can collect and provide data about the number of present students, graduated

students and their employment. Through the provision of accurate data on physical spaces, education and welfare facilities and the number of staff, the secretariat of Performance Assessment Committee will provide apparatus to MERC to

Statistics plays a key and influential role in all branches of basic, experimental science and humanities.

have an optimal use of its existing facilities, prevent the purchase of unneeded equipments and to keep the expectations at a logical level. At the end, it needs to be noted that the databank of the secretariat will significantly reduce the bureaucratic procedures needed for the collection and dispatch of data and statistics, moreover through a right planning, statistical data can be collected and updated periodically, thus reducing the time needed for the filling of various questionnaires.

In short, the Committee's main tasks are as follows:

Collection and classification of

data and provision of statistical data

Processing and completion of the collected data by means of relevant software programs

Close collaboration with different departments for the preparation of statistical tables, graphs, indexes etc

Preparation and maintenance of up-to-date statistics

Provision of data and statistics required by the MERC management

Provision of data and statistics for the Ministry of Science, Research and Technology

Completion of efficiency indexes at the macro level at MERC

Assistance in the preparation of statistical reports for the senior officials of the MERC as requested by individual managers of different departments

Preparation of a statistic manual for students, faculty members and staff of Higher Education Research and Planning Institute

Completion of the statistical portal of Higher Education Research and Planning Institute

Assistance in the evaluation of the periodical performance and the determination of comparative ranks for staff, students and faculty members

Training Class

Continued from page 1:

In this class in which a group of faculty members, students and staff had attended, two databanks were introduced:

Scopus Databank:

Scopus is the largest "abstract" and "citation" database of research literature and quality web sources in the world. It is designed to find the information scientists need. This databank was founded by Elsevier branch of Netherlands' Science Direct Databank. It covers more than 15.000 journals from 4.000 international publishers. Making use of this databank not only offers quick, easy and comprehensive access to the most important articles, but also can help one track and rank the most active authors, research centers and organizations and reference journals. This databank is available at the following address: www.scopus.com

(Science Direct) Elsevier Databank:

Elsevier is the largest publisher of E-journals. Science Direct is a basic databank for millions of researchers throughout the world and it has 10 million articles, 2500 journals and 6.000 e-books in various field of study such as science, technology, medicine, etc. This databank can be reached at www.sciencedirect.com



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Equipment purchase and installation

1. Planetary Ball Mill:

Planetary ball mills are used for grinding, mixing and mechanical alloying of wet / dry fine, coarse and brittle materials, such as minerals, alloys, mineral rocks, chemicals, glass, ceramic, plants and etc. It has four 500-ml compartments, two 250-ml compartments and two 50-ml. It has got 400 stainless bullets of 10 mm, 100 bullets of 20 mm, 32 bullets of 30 mm and 16 bullets of 40 mm.



2. Spectrum 400 FT Mid-IR and Far-IR System:

This instrument is capable of measuring mid and far infrared. Infrared measurement, as an advanced and powerful method is used for the structural determination and measurement of chemical varieties and it has widespread applications in organic and metal organic compounds and nanotechnology.



3. XMD 300 (X Ray Diffractometer): This instrument is used for the qualitative and quantitative analysis of phases of a large range of materials. What differentiates this instrument

from its counterparts concerns its low electric current which obviates the need for cooler. Its electrical power is 50 watt. In this model, the geometrical basis is $\theta - \theta$ so the sample is fixed and the X-ray tube and detector can move and this function enables the analysis

of a wide range of liquid and solid materials. The anode of the instrument is CU and it can analyze the materials in a range of 6 to 126 degree. Another feature of this instrument is its speed which can analyze each 10 degrees in 60 seconds.



4. XMF 104 (Energy dispersive X-ray spectrometer):

This device is used for the qualitative and quantitative analysis of phases of elements. The range of elements that can be analyzed varies from Al to U. Point analysis is an important feature of this device which means the required point can be determined by laser. This function enables the analysis of very small samples. The anode of this device is (Mo).



Passive Defense, a national exigency

After the collapse of the Soviet Union and the change of the world's power structure, hegemonic powers tried to get political, economical and military monopolies by dominating weak nations. The high costs involved in the direct military interventions and the global rejection of war made the superpowers resort to non-military invasion as a useful strategy. The use of intelligence systems

of Israel to Gaza as two examples of passive defense which made the enemy admit defeat.

Generally, any civilian act, which can prevent or lower casualties during war or unexpected accidents, is called "**passive defense**". Passive defense also refers to "provision of security under threat". In sum, the features of passive defense include:

Saving the people's life and property

