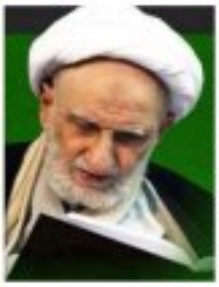
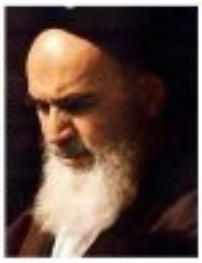


Grand Ayatollah Mohamed Taqi Bahjat: The problem with us is that we never applied reforms to ourselves, we never do, and we will never do. We never want to change ourselves for the better. We want to do what we desire and do not wish others find faults with us.

Imam Khomeini: If we believe in God, nothing will scare us; no matter if we kill or be killed, we will be blessed. We consider martyrdom as a great triumph and our nation also believes in martyrdom whole-heartedly.



News

Number

Latest News

Peace be upon Fatemeh Al Zahra

Mourning ceremonies were held on the anniversary of the martyrdom of the Grand Prophet of Islam Mohamed's daughter, Fatemeh Al Zahra (peace be upon them) on Wednesday dated May 27, 2009 with the participation of the research center's congregational prayers leader and a large number of Shia advocates at the chapel of the research center.

Growth in Research Statistics

Exact planning and unrelenting efforts of the relevant authorities in the Materials and Energy Research Center (MERC) have contributed considerably to the number of projects in recent years.

Year	Project	Invention	Article
1384	34	8	101
1385	134	18	123
1386	137	57	203
1387	246	114	328

Editorial Board of the Journal of Engineering Materials

The fourth meeting of the editorial board of the Journal of Engineering Materials (JEM) was held on Tuesday July 25, 2009 at the higher education building. In the course of this session, 46 articles out of the proposed 156 were approved for publication in the journal.

Extending Time Limit for Students Admission

During its November 29, 2008 meeting, the Council for the Development of Higher Education (MSRT) extended the time span for the admission of "Renewable Energy" students seeking MSc degree at MERC.

Installation of platforms in nano, bio and materials extraction laboratories

Following the decree of Prof. Sadrnezhaad (head of MERC), equipping and supplying nano, bio and extractive metallurgy laboratories started on Jan. 20, 2009 and finished off on March 6, 2009 in order to begin work imminently.

Professor Vasiliev at MERC

Professor Vasiliev of Ukraine's Institutes of the Materials Science who was accompanied by a board of three from the presidential bureau on technological cooperation, participated for a second time at MERC on Monday April 27, 2009 in order to monitor the manners in which a memorandum of collaboration could be implemented.

Exaltation of the epical liberation of Khorramshahr

The ceremonies were held on 26/05 marking the reclamation of the city of Khorramshahr seized during the [Iran- Iraq] war and the anniversary of resistance, self-sacrifice and victory, with the participation of Dr. Sadrnezhaad, head of RCMES, and a number of colleagues and families of martyrs at Shahid Mofatteh theater.

First Nation

Holding the first national conference on refractories at RCMES signifies a progress in the technical and strategic discipline of heat-resistant materials within a broader domain of science in the country and the research center. This assembly creates a proper atmosphere for interaction between artisans and researchers involved in the field. Iran's recent advances in the sector and the outlook it seeks thereby have been exposed to and elaborated on by elites in the course of the gathering. A synopsis of the contents presented during the inauguration ceremony is as follows.

Inauguration Ceremony

After the national anthem of the Islamic Republic was played and a number of verses of the Holy Qur'an were recited, the ceremony began at Shahid Bayat Movahhed Congregation Theater. Dr. Seyyed Ali Mashkat, the science secretary of the conference was the first to take the stage and present a summary of accepted articles. He noted, "We received 110 abstracts before October 22 last year, of which 91 were selected for presentation. All the articles have been contributed through electronic mails and then judged by a science board of 38 members, resulting in the approval of 70 articles of which 32 were allowed for oral presentation while 38 others have been circulated through poster. The next speaker was Dr. Sadrnezhaad, head of the research center and the chairperson of the conference. Starting with words of praise for God and tribute to the late founder of the Islamic Republic and the Islamic Revolution martyrs, he went on to say, "We hope to be able to review in this gathering a tiny bit in the vast body of knowledge explored and accumulated by scientists and researchers during the past centuries."He added, "The national conference on refractories has become concurrent with the closing days of Iran's fourth key development program (the period centering around knowledge expansion) and the initiation of the country's fifth development program (the period of instigation of justice and growth of science and technology) in an atmosphere filled with

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Workshops

During the two-day conference, four workshops were held as follows:

Workshop	Presenter	Number of participants
New generation of refractories used in induction furnace	Mrs. Martina	38
Electric ark furnace and blast furnace in iron and steel-making industries	Mr. Mohammad Hasan Joulazadeh	53
Cement furnace operation	Dr. Hossein Nooranian	30
Refractories used in cement furnaces	Mr. Mohammad Reza Azizian	54

After the workshops were finished, a certificate, indicating their participation in the course, was granted to the participants

Conference and Media

Reporters of the IRIB, Channel 4, IRNA, ISNA and Fars attended the conference and produced some reports for their audience. The following is a summary of the news coverage by these agencies: **IRNA**: Up to now, 30% of the researches done by Materials and Energy Research Center (MERC) have been used in the industry sector. As IRNA reports, Seyed Khatiboleslam Sadrnezhaad, alongside the conference on refractories and furnaces held in Karaj, added in the presence of reporters: the purpose of the Materials and Energy Research Center from holding the refractories conference is to present research articles in order to help to the development of the technology in the country and solve the problems and remove the obstacles laid before the industry as well as the manufacturing companies and service providers. He asserted, "During the previous year, 328 articles, 114 inventions and 12 research projects were presented by the instructors, students and researchers of the very research center, which shows a 1.5 fold increase compared to 2007. He added, "The large country of Islamic Iran has a great potentiality in different scientific fields such as refractories and new materials, which are considered as important scientific fields throughout the world. He pointed out, "Researchers should tend to the scientific needs of human kind, and the artisans should 'equip' themselves to modern and up-to-date knowledge, so that they would be able to

Top Articles

Based on the opinion of the jury, the following arti
ceremonies of the conference.

A. O

1. Study of the Effect of Different Silicate, Ph
Continuous Steel Casting (Seyyed Mosa Sad
industries, is the clogging of the working and
consumption of refractories and, thus, cause hig
oxides, occurs in such a way that within high tem
fast-melting phases and reaction of such phases
each other and stick together. Sticking of these li
and even will damage the permanent lining and t
been given to the study and review of the proper
order to choose the most appropriate binder to be
in deskulling process. Results of microstructural
using X-ray Diffraction (XRD) shows that among
potential to be used in combination with the mixes
the reason that it produces no particular fast-
improvement of sintering, deskulling process is d
would not be damaged in any way.

2. Producing Glass-Ceramic from Iran Alloy S
Ali Faghihi Sani, Mahdi Mirzaloo): In this resea
produced in ladle furnace, as one of the applicati
come by such a system, additions like silica, al
materials and the mixed steel slag were placed in
furnace for 1 hour. The molten material was p
temperature. In order to study the crystallization b
The obtained glass was put under heating operat
results indicated that the main phases in the
temperature and time length are respectively he
growth. The results of the hardness and bending s

3. Ultra Fine Particles of Boron Carbide Produ
Eftekharie, Reza Ebrahimi, Amir Abbas Noor B
including boron oxide, Carbon and Magnesium,
Carbothermic reduction of boron oxide at a tem
temperatures over 1100 ºC. This is while ultra fin
milling at the ambient temperature. Powders fro
analysis; and then, the size of the particles and
carried out under Argon atmosphere while mass
Carbon and Magnesium were respectively 10, 1
idea that the Boron Carbide phase is generated at

4. Produce and Study of the Properties of
Ariyanpour, Abdolqadir Nasiri, Parisa Asadollahp
cement Cordierite-Mullite castable, some samples
was synthesised, granulated and mixed with ot
calcite alumina with distinct proportions. Then, by
after bone-drying and firing at temperatures of 1
and porosity, cold compressive strength and coeff
via X-ray diffraction, and microstructural analys
indicated that the samples have the potential to be

5. Combining Gel Casting and Cold Isostatic
Farzaneh Arabpour, Ahmad Reza Bahramian): ge
with complex geometrical shapes. In this method
obtaining the theoretical density is somehow dif
forming ceramics with simple and less complex s
piece is produced. In this research, ceramic piece

Materials and Energy Research Center
Newsletter
Number 12, May 2009
Councils

March 09, 2009

Research council

The final report of the contract-based project "Producing and Studying Siliceous Nanofilters", supervised by Dr. Falamaki was approved by the Nano-technology Committee.
The final reports of the following internal projects were approved by the Committee of the Experts:
"Controlling Wind Turbine via Parametric Neural Network" supervised by Dr. Hasheminejad, "the Effect of Mechanical Activation and Microwave Heating on Synthesis and Sintering of Mullite Nanostructure" and "Sintering Behavior of Apatite-Mullite Hydroxy Composite" supervised by Dr. Ebadzadeh, "Dissolution Kinetics of Rhenium and Molybdenum from Molybdenum Roaster Dust" by Dr. Keshavarz, "Tungsten-Copper Nanocomposite and a Kinetic Study of Reduction Reaction" supervised by Dr. Sadrnezhaad and "the Study of Sewage Decolorisation of Alcohol Producing Units by Aspergillus Fumigatus" supervised by Mr. Pazouki.
The following internal projects proposals were approved under certain conditions:
"Design of the Modern Lead Anodes Containing Silver and Cobalt for Zinc Electrowinning" supervised by Dr. Keshavarz under the condition of publishing and ISI or IJE article, "Synthesis of Magnesia- Forsterite- Spinel Refractories Using Domestically Produced Components" supervised by Mr. Sarrafi under the condition of publishing a white paper, "Building Photoreactor for Stream and Stagnant Waters" supervised by Dr. Vaezi under the condition of patenting an invention and acquiring the approval of an expert in the field. "Design and Manufacturing Optimised Composite Wind Turbine Blades" under the condition of publishing a white paper and a conference paper and "Design, Building and Optimal Control of a 3000w Photovoltaic Power Plant" supervised by Dr. Hasheminejad under the condition of publishing a research paper or JEM article.
The contract-based project proposal "Determining the Amount of CL Ions in Water-Glycerine Solution" supervised by Dr. Qaderi was approved

May 04, 2009

The timetable of the research council meetings was put forward and approved.
The final reports of the following internal projects were verified by the committee of the experts:
"Landscaping the Site of the Renewable Energies and Reorganising and Launching its Solar Collectors" supervised by Dr. Kianpour Rad and "Feasibility Study of Recycling of Used Polymer, Using Biotechnology" supervised by Dr. Qavipanjeh.
The request for extension of the internal project "the Effect of the Organic Additions and Polymeric Fibres on Strength and Permeability of the Ceramic Shell Mold with Zircon Precoat" supervised by Dr. Masood Alizadeh was accepted.
The following internal projects proposals were approved under certain conditions:
"Producing Olein Nanostructure Cathodes po4 (Fe, Mn) Li for Chargeable Lithium Batteries" under the condition of publishing a white paper and a conference paper, "Non-Aqueous Synthesis of Nickel Nanoparticles without Using Surfactant", under the condition of publishing a research paper or JEM article and "Producing Fe-Ni Alloy Nanoparticles Using Mechanochemical Method" under the condition of publishing a white paper and a conference paper, supervised by Dr. Sadrnezhaad, "Synthesis of Nano-Sized ZnO Powder, Using Hydration of Activated Metal Powder Method, Characterisation and Making Varistor" supervised by Dr. Kazemzadeh under the condition of publishing an ISI or IJE article, "Study of the Effect of Micro and Nano particles on Photovoltaic Energy Generation in the Atmosphere", supervised by Dr. Halak, under the condition of publishing a white paper, and "Optimisation of the Environmental Conditions of Vulcanisation of the Waste Tyres" supervised by Dr. Qavipanjeh, under the condition of publishing 2 ISI or IJE articles.
The responsibility of advancing the contract-based project "Designing and Building an Exemplary Unit of Grey Water Treatment to be Used in Watering Gardens and Parks" was delegated to Dr. Abbaspour, as he expressed his interest in shouldering the task.

Feb-Mar 2008

Higher Education Council

MS projects:
1. Running the following projects was accepted as they were previously approved by the Ceramics Research Centre Council:
"Behaviour of SnO2 Nanopowder and Mesoporous SnO2 Nanopowder in Sensor of H2S and CO Gases" by Minoo Zamani Fard, student of Materials Engineering matriculated in 2007, supervised by Dr. Ehsan Marzban Rad and Dr. Babak Reisi, and "Synthesis of the Spinel Nanopowders Containing Cobalt, Using Micro-Emulation Method" by Hamid Ebrahimnia Khaniki, student of Materials Engineering matriculated in 2007, supervised by Dr. Eskandar Keshavarz Alamdari.
2. The request of Mahdi Qahari and Reza Riahifar for a sabbatical was accepted on the condition that it is agreed by the Ministry of Science, research and Technology.

Apr-May 2009

1. Ms. Zahra Khakpour, student of Materials Engineering matriculated in 2006, has successfully obtained the required points in PhD Comprehensive Examination, and her project titled "Study of the Effect of Additions on Ion Conductivity Property, Microstructure and the Behavior of Sintering on Ceria-based Solid Electrolytes", supervised by Dr. Amir Ali Youzbashi and Dr. Amir Maqsoudipour and advised by Dr. Kamran Ahmadi, was eventually approved by the council.
2. Running the Comprehensive Examination for PhD students matriculated in 2007 on 27/07/2009 was approved.
3. The request of Mr. Shahab Khameneh for a sabbatical was accepted as the official invitation from Spain University was submitted.
4. Admission of PhD students to enroll in the second semester of the 2009-10 school year was approved.
5. It was agreed that the students enrolled in 2009 onward be provided with the required space and laboratory equipment and facilities (based on their proposal), in order for them to be able to work on their theses

Materials and Energy Research Center

Newsletter

Number 12, May 2009

Supporting Patents in the Field of Nano Technology

In order to encourage and support the intellectual ownership activities of the universities and research centers, nano-technology development special committee, has taken certain measures. These measures include training intellectual ownership experts and obtaining the right to use patent databank (QPAT) (One of the most well known patent databanks), and offering it to institutes (intellectual ownership section of them). In order to encourage the faculty members and the students (the potential patentees) on one hand, and intellectual ownership experts on the other, the special committee has taken on supporting patenting in the field of nano-technology. This is as follows:

1. Supporting those patents which are the products of the students' theses.

Type of support:

a. Supporting the patents: Paying 80% of the costs of patenting in well-known patent offices such as EPO, USPTO, etc.

Manner of payment: the money is paid at different stages. It would be paid after the confirmation of one of the institutes providing intellectual ownership services (the institute by which the patenting procedures are completed) and after a disbursement of 20% by the patentee at each point.

b. Encouraging support of the inventors:

The amount of the fund: Up to 60,000,000 Rials;

Time of payment: 50% after filing the invention, 50% after the final grant;

The inventors' share: 50% supervisor, 50% the student

2. Supporting the individual inventions patenting:

a. Supporting the patents: Paying 80% of the costs of patenting in well-known patent offices such as EPO, USPTO, etc.

Manner of payment: the money is paid in different stages. It would be paid after the confirmation of one of the institutes providing intellectual ownership services (the institute by which the patenting procedures are completed) and after a disbursement of 20% by the patentee at each point.

b. Encouraging support of the inventors:

The amount of the fund: Up to 60,000,000 Rials;

Time of payment: 50% after filing the invention, 50% after the final grant.

3. Encouraging support of the intellectual ownership expert of the university:

The financial support of the intellectual ownership expert is granted based on each invention patented.

The amount of the fund: Up to 10,000,000 (ten million) Rials, which would be paid for each file which is finally granted.

Time of payment: up to 50% after the filing and 50% after the final grant.

The amount of the fund is based on the points that the expert receives, the points are given based on filing the patent documents and the evaluations done by the representatives at the companies and also the evaluation of the committee's expert. Capabilities of intellectual ownership expert are evaluated and assessed based on the following criteria:

Search: maximum points: 20;

Invention description: maximum points: 30;

Making the patent draft copy: maximum points: 30;

Filling the application forms: maximum points: 20.

Biological Treatment of MERC Waste Water

The amount of sewage created per capita (liter per day): 10/11
Maximum sewage output per hour (liter per hour): 3600 (in peal
Primary treatment includes screening, grit removal and FOG (fa
greases) removal.
Secondary treatment includes aeration and final sedimentation
The enactment of the mentioned program came to an end at t
and now is in pilot stage which has been successful up to now.
sewage and grey water is used for watering the farms and t
centre's plants. If the project leads to the desired results, the wh
of the center would be treated and optimally used.

Cooperation in order to transfer the techn knowledge of making solid oxide fuel ce

Continued from page1:

Professor Vasiliev announced his five-year program regardi
battery as follows:
Making a solid oxide fuel cell in 12 months
Mass production of 10 w fuel cell running on hydrogen after 21
Mass production of 10 w fuel cell running on natural gas after 2
Mass production of 1kw fuel cell running on natural gas after 3
Mass production of 5kw fuel cell running on natural gas and fue
system after 5 years

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test their f
They h
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willingr
receiving both technical and financial supports for mass produ
cells."
After that, Dr. Salardini, financial-administrative deputy of th
Center, stated, "The Research Center is ready to take the resp
running technology development programs and scientific studi
mass production of 5kw solid oxide fuel cells. The manpo
equipment and facilities of the center would also be used in
For the start, it was suggested that the center should
production of 10kw fuel cells. It was also requested that
operations committee provide the required technical and financ
and supplies.

Meeting of the heads of the universities consumption norm reform congress