Biography:
Professor Hassan Tajbakhsh earned his doctorate in Veterinary Medicine from Tehran University, in 1961. He has been Professor at the department of microbiology and immunology, Tehran university, since 1963. In 1967, he obtained his special board degree in immunology and bacteriology from the Pasteur Institute. Professor Hassan Tajbakhsh is known for his precious books written in Persian and English, twenty two books, on microbiology, immunology and medical history (human and veterinary medicine history). He is the author of two hundred articles in Persian and English, in immunology, bacteriology and medical history including human and veterinary medicine history. During his long research career, spanning over many decades, Professor Hassan Tajbakhsh had a deep interest on the ancient Iranian veterinary medicine. He wrote that the veterinary medicine used the same methods and principles of medicine, applying medication, bleeding, cauterization and surgical operations. In the case of incurable diseases, sometimes they resorted to amulets and supplication. In the past, Iranian surgeons were called Ostad (master) and sometimes they performed exceptional surgical operations. There are a few examples on dressing with plaster cast, which should be considered the first report on using plaster, years before the introduction of this technique in Europe.

His research interests were also concerned with the medicine in Iran, in the 19th century despite the introduction of the modern medicine in Iran, traditional surgeons were still working and their performances were great.

Professor Hassan Tajbakhsh in his study says that unlike physicians, Iranian veterinary surgeons were very interested in carrying out minor and major surgeries and had no fear of the probable complications. Some of them were skilled in their job. Iranian veterinary surgeons refer to some surgical treatments including: Treating Lameness and Hoof Tenderness, Osteopathic, orthopedics and dislocations, colitis and ascites.
Abstract:

Chickpea (Cicer arietinum L.) with about 26% of the protein has great importance in the human diet and due to nitrogen fixation has a special status in rotation with cereal crops. In this project, through cooperation of Dryland Agricultural Research Institute (DARI) with International Center for Agricultural Research in the Dry Areas (ICARDA), during 12 years via the implementation of several experiments in different climatic environments and in controlled conditions, the first cold tolerant chickpea variety had selected among different genotypes and release as «SARAL If through this cultivar, 0.2 million hectares of drylands that every year remain as fallow, go under cultivation.
Abstract:
An advanced method of increasing turbine inlet temperature (TIT) and consequently the efficiency, in recent generations of gas turbines is using Directionally Solidified (DS) blades which are produced by Directional Solidification technology.

In Directional Solidification (DS) method by changing the solidification process, equiax structure changes to columnar and consequently high temperature mechanical properties of blades improves significantly in new generation of advanced gas turbine. Knowledge of chemical composition and casting of advanced superalloys and high-tech ceramic molds and cores as well as designing and manufacturing robotic ceramic shell lines and VIM furnaces are the key points for implementation of this technology.

The program—Development of DS technology for manufacturing turbine blades—which consists of 10 projects started in 2011. The project has been carried out by MAPNA Turbine Blade Engineering and Manufacturing Co.- (PARTO) in collaboration with R&D department of MAPNA Group and several other universities. In 32 months, this mega project resulted in mass production of the first stage blades of MS5002D gas turbine for oil and gas industries. Design and development of special machinery, mass production process of DS blades, providing the foundation for manufacturing and mass production capability of F and higher class advanced gas turbines in MAPNA Group could be mentioned as some of the most important achievements of this program.
Abstract:

Majority of the agricultural land of Iran is calcareous soil. In this type of soils, essential plant nutrients such as phosphorus, iron, zinc, copper and manganese are fixed and become unavailable to plants. So nutrients deficiency and low fertilizer use efficiency are one of the main limiting factors in agricultural crop production in the country. For instance, less than 20 percent of consumed annually imported phosphate fertilizer (~500 700 thousand tons) is absorbed by plants. Using elemental sulfur as an abundant and most economical acid generating material in the country is one of the main strategies to increase nutrient availability in calcareous soils. Sulfur is one of the byproduct of oil and gas refineries which is produced around 2 million tons every year. By this opportunity in the country, Soil and Water Research Institute (SWRI) during last decade carried out a series of research projects from basic to applied phases to improve crop production. As a result, microbial sulfur fertilizer production technology (Know how of Thiobacillus inoculant) was obtained. The technical knowledge provided the possibility usage of sulfur as a biofertilizer which along with the increase of nutrient availability in the soil could be able to reduce part of needs for importing fertilizers in the country.

The produced biofertilizer is soft and moist powder containing more than 10 million Thiobacillus cells per gram. These bacteria are capable to oxidize elemental sulfur. This formulation is able to hold bacteria in its active state for a long time. Using this biofertilizer along with excess and abundant sulfur in the country could be alternate part of using chemical fertilizer and reduce import of chemical fertilizers. This achievement has following consequences:

1- Prevention of outflow of foreign exchange from the country
2- Reduction of chemical fertilizer application at the farm level
3- Production of safe products
4- Creation of jobs in the country
5- Usage of inexpensive raw materials for the fertilizer production
6- Improvement of soil and water conservation.

It is important to announce that 300 thousand packages of biofertilizer have been produced by the company who bought the technical knowledge which will be purchased and distributed by the Ministry of Jihad-e-Agriculture.
Abstract:
Using of propene in refrigerant cycle of CO₂ recovery plant of Pars Petrochemical Company which located South Pars of energy zone (Assaluye) had many problems. Safety: Environmental & economical” aspects are most important issues. Propene imposed the company expenses and also threatened the plant in safety (to keep it in storage which located in site) and environmental.
Propane has been added to the refrigerant cycle smoothly and softly and during period all the vital operational and mechanical parameters were under supervision and controlled after completion of the project till now more than 13 month every conditions are normal.
This magnificent economical; safety and environmental project has been concluded by Pars petrochemicals experts without any foreign and domestic partnership.
Abstract:
One of the vital problems in maintenance engineering is to find a reliable and efficient strategy. To this end, vibration monitoring and protection systems due to their ability to predict machinery failure have found high importance. Rotary machine vibration measurement systems have been developed to measure vibration parameters on different points of a machine so that the user might estimate the condition of the machine and diagnose any possible malfunctions. Hardware of the system consists from five different input / output cards: power supply, tachometer, vibration, gateway & malfunction. Gateway card is used for set up and configuring the system for connection protocols. Vibration card is a four channel input module used for connection of vibration transducers to the system. On this card user can see vibration values and program the alarm and trip values. Tachometer/ temperature cards are used for monitoring rotating speed and semi static parameters such as temperature, pressure, flow, etc. finally power supply card supplies the needed electricity for the whole system and sensors.
Abstract:
AryaGate is a cloud access point, optimized for bank branch networking requirements. Integrating all network access services, AryaGate provides integrated management and security capabilities.

Thanks to its modular architecture, AryaGate is capable of connect via hybrid networks such as DSL, fiber, 3G/4G or satellite channels. One of the most important modules of AryaGate, named dvbX, is based on Software Defined Radio technology provides the capability to communicate through most of the current available satellite hubs such as Advantech and i-Direct. dvbX also can provide a point-to-point communication channel as well as a full mesh topology.

AryaGate is Open. The user can develop her own application e.g. his proprietary firewall on ArayGate open platform or use any third party application. The open architecture of Aryagate brings the compatibly to Next Generation Networks such as Software Defined Network.

Transcending User Experience of AryaGate, through its touch screen user interface, makes it the first network appliance with such capability, hence, there is no more need to professional network assistants to interact with AryaGate.
Abstract:

In this project, the know how of using Dedicated Short Range Communications for Wireless Access in Vehicular Environments based on IEEE 802.11P (DSRC/WAVE) is gained. Some cases of connected vehicle operational applications have been designed and implemented in improvement of driving safety, mobility and environmental pollution control. The project is implemented in two parts which are Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I) and has been tested practically on Tehran-Rasht freeway and some parts of Qazvin city as pilot area.

The necessary hardware for running applications including on-board unit (OBU) and roadside unit (RSU) has been designed and fabricated/integrated and also base and application software has been developed. On-board units have been installed on 150 volunteer vehicles which are travelling in pilot area regularly and constantly. Also, by deployment of RSUs in 32 spots, the necessary infrastructure for running applications is provided. These equipments, together with central control room (CCR), which supervises the vehicles’ data and message communications, have shaped the connected vehicle system in a consistent architecture.

It cannot be denied that the need to domesticate technology, strengthen the foundations of production and industry and use a creative manpower is a necessity for a sustainable development. The Iranian Research Organization for Science and Technology in the past twenty-eight years, by annually organizing the Khwarizmi International Award, has kept its promise and fulfilled its mission by supporting and assisting researchers in the area of science and industry. Since 2013, after a quarter of a century and selection of more than nine hundred outstanding research works, the steering commission of the KIA considered the KIA Laureates of the last sessions with a new look and new criteria.

This specialized scientific committee has been primarily designed to study the research works of the KIA Laureates of previous sessions and recognized those who have been successful in converting science into national wealth and, Product mass production and development of knowledge-based companies and introduces them to the scientific and industrial community.

And as a result there are a few:

- Looking to the commercialization of scientific and practical ideas as a valuable indicator.
- Encourage industry to invest in new ideas from university research
- Demonstrate the importance of policy, planning and allocation of financial resources to hold scientific competitions.
- Introduction of successful innovators and entrepreneurs in the knowledge-based, will encourage other practitioners in scientific and industrial development path.

We believe perseverance, creative thinking, passion to serve the community, team working, planning and innovation is Mystery to passing the challenges, in this way, entrepreneurs, community and future generations will benefit from this effort.

The expert group performs evaluate with a separate questionnaire and specific questions, and indicators such as: industrialization, quality product, entrepreneurship, investment, capital, market, stability, and standardization, level of commercial transactions, science development, customer satisfaction and product export.
Abstract:
This product is classified as Patient Care monitor. The core part of which is a multi-parameter monitor with the following features:

- Small and lightweight (800 g)
- Internal battery runtime (up to 2 hours)
- Internal memory for storage of patient data
- Color TFT touch screen
- Displaying parameters independently on the slave monitor
- Water and shock-resistant
- Continuous monitoring
- User friendly and time-saving
- High accuracy in clinical assessment

Pooyandegan Rah Saadat Company Prosperous in National Production
The characteristics of SAADAT Co. with respect to four categories of knowledge-based entrepreneurship, research and development, production and investment & marketing are explained as follows:

Mass production and stability of the company over past years, planning for entry into international markets, obtaining various national and foreign certificates for patent, achieving production license and quality control for commercialization and export of the product are prosperity factors of this knowledge-based company. Production growth implies generation of wealth from science.

Transformation of an idea into a real product, creativity, innovation and invention, private investment, scientific methods of research, hard-working and effective R&D, staff promoting, hardware & software features of products and developing new designs as well as job creation and growing, trend of export are among entrepreneurship characteristics of the company.

Identification of target market needs, meeting client needs and improving usability, stabilization of trademark position in the market among local and foreign competitors, meeting a large portion of the medical centers’ needs, importing foreign currency to the country and saturating the domestic market imply competency of the company’s management system.
Abstract:
My research group contributed to the initial discovery of the family of galectins and has since been devoting efforts to unraveling the biological functions of these proteins and their roles in health and disease. By addressing the functions of endogenous galectin-3-, we discovered its anti-apoptotic function, which is the first demonstration of intracellular functions of galectins. We subsequently demonstrated a number of other intracellular functions of this protein. We developed galectin-3-deficient mice and our studies of these mice have provided significant insights into the role of galectin-3- in immune and inflammatory responses. Our group has also been tackling the biology of galectin-7- and established its pro-apoptotic function, as well as its role of in the biological responses of keratinocytes. My group also discovered galectin-12-, which is preferentially expressed by adipocytes. Through studying galectin-12-deficient mice we generated, we have shown the critical role of this protein in lipid metabolism.

Biography:
Prof. Fu-Tong Liu is currently Distinguished Research Fellow and Director, Institute of Biomedical Sciences, Academia Sinica, Taiwan. He received his BS in Chemistry from National Taiwan University, PhD in Chemistry from University of Chicago, and MD from University of Miami. He has served as Head of the Allergy Research Section at the Scripps Research Institute, Head of the Division of Allergy at La Jolla Institute for Allergy and Immunology, and Distinguished Professor and Chair of Dermatology, University of California-Davis. He is a pioneer and leading investigator in the studies of a family of animal lectins, galectins, and has discovered the roles of these proteins in inflammation and immunity, as well as cancer progression and adiposity. He has published over 300 original scientific papers and review articles. He is the scientific member of Academia Sinica.
Abstract:
My research focuses on understanding the molecular basis of organelle stress and its relationship to pathological conditions affecting the nervous system, in addition to develop of prototypic therapies to prevent this damage. Our laboratory is committed to study cellular strategies involved in adaptation to chronic protein folding stress and use this knowledge to develop therapeutic strategies. We have been pioneer in defining the functional impact of protein folding stress to brain diseases using preclinical models and genetic manipulation of stress pathways. We are also developing gene therapy strategies to alleviate cellular damage in different diseases involving protein misfolding such as Parkinson, Alzheimer and amyotrophic lateral sclerosis. Our laboratory is one of the most productive laboratories in Latin America and currently funded by various national and international organizations. We are committed to train the new generation of researchers in biotechnology and biomedicine and have built a highly competitive and innovative laboratory.

Biography:
Claudio Hetz was originally trained as Biotechnology Engineer at the University of Chile and performed a Ph.D in Biomedical Sciences at Serono Pharmaceutical Research Institute, Switzerland. Then he did his postdoctoral training at Harvard University. He joined the University of Chile during 2007 and is currently Full Professor at Faculty of Medicine and adjunct Professor at Harvard. He is also currently the Co-Director of the Biomedical Neuroscience Institute. His research focused on understanding the molecular basis of protein folding stress, its relationship to pathological conditions affecting the nervous system, the generation of new animal models, and the development of prototypic strategies to prevent neuronal damage. He has received important award including the TWAS-ROLAC Young Scientist Prize as outstanding young scientist in Latin America, was finalist in the Eppendorf and Science Award in Neurobiology, and was awarded with the Cell Biology Society and Bios-Chile prize as the best young scientist of Chile.
Abstract:
Microfluidics or “Lab on a Chip” uses microfabrication technology to manufacture devices with micrometer size channels, valves, chemical reactors and detectors for use in analytical chemistry and clinical diagnostics. Main benefits are related to rapid molecular diffusion, fast separations, fast reactions, small volumes, small instrument size and easy integration of multiple fluidic steps. Examples include chromatography, electrophoresis, immunoassay, polymerase chain reaction and glow discharge optical emission spectroscopy on chip.

Biography:
Andreas Manz studied chemistry at the Swiss Federal Institute of Technology, ETH Zürich, Switzerland and graduated 1986 with a PhD in chemical sensors with the late Prof. Dr. Wilhelm Simon. After a short postdoc stay at Hitachi Ltd., Tokyo, Japan, he was working at Ciba-Geigy (now Novartis) at Basel, Switzerland. In 1995 he followed a call to become a professor at Imperial College, London, United Kingdom. From 2003 to 2008 he was the director on the ISAS, Institute for Analytical Sciences, Dortmund, Germany and since 2009, he is a scientist at KIST Europe and a professor at the Systems Engineering Department of the Saarland University, Saarbrücken, Germany.
Abstract:
The aim of this research work is to develop new mathematical tools and inversion methods to address emerging modalities in medical imaging, nondestructive testing, and environmental inverse problems. It synergizes asymptotic imaging, stochastic modelling, and analysis of both deterministic and stochastic wave propagation phenomena in order to go further in the field of mathematical imaging and solve challenging problems posed by new imaging modalities.

Biography:
Habib Ammari is a Director of Research at the Department of Mathematics and Applications at Ecole Normale Supérieure in Paris. He received a Bachelor’s degree in 1992 and a Master’s degree in 1993, and a Ph.D. in applied mathematics, all from the Ecole Polytechnique, France. Then, he received a Habilitation degree in Mathematics from the University of Pierre & Marie Curie in Paris three years later.

Prof. Ammari is a world leading expert in wave propagation phenomena, asymptotic analysis, and mathematical imaging. He published more than 180 research papers, seven high profile research-oriented books and edited seven books on contemporary issues in applied mathematics.
Abstract:
Prof. Kazuo Watanabe has been working on multilateral, international and collaborative research associated with the conservation and utilization of plant genetic resources with biotechnology application for sustainable development at the global basis. Capacity building by technology transfer has been the part of his activities with developing countries, including OIC-COMSTECH, Iranian research organizations such as ABRII and IBRC have been cardinal partners, especially on the biotechnology application to mitigate the climate changes with abiotic stress tolerance uses on crops and trees. His achievement has a cardinal impact on academic research community elsewhere for guiding the research for sustainable development with the plant genetic resources and their biotechnology applications. There are recognitions of the research achievements beyond borderlines by the governments, intergovernmental organizations, independent scientist communities and people living under harsh environments.

Biography:
Prof. Kazuo Watanabe was born in Osaka, Japan and gained BSc and MSc from Kobe University. He received Ph.D. degree from University of Wisconsin in 1988. He started working at International Potato Center, Lima, Peru from 1988 to 1996. He has been appointed as an adjunct faculty member at Cornell University, USA since 1992. Moreover, he worked at Kindai University, Japan from 1996 to 2000 on plant biotechnology in collaboration with various international organizations. Now, he is a scientific member at the Gene Research Center, University of Tsukuba, Japan.
Abstract:
The bottom–up approach is considered a potential alternative for low cost manufacturing of nanostructured materials. It is based on the concept of self–organization of nanostructures on a substrate, and is emerging as an alternative paradigm for traditional top down fabrication used in the semiconductor industry. We demonstrate various strategies to control nanostructure assembly at the nanoscale, focusing on multifunctional materials, i.e. materials that exhibit two or more functionalities. In particular, we investigate the properties of multiferroic materials, namely systems that exhibit two ferroic properties, in this specific case ferroelectricity and magnetism. In this context, we demonstrate the use of multiferroic thin films for solar energy conversion and solar water splitting both for niche applications (e.g. self-powered sensors) and for integration with mature photovoltaic technologies like silicon.

Biography:
Federico Rosei is Professor and Director of Institut National de la Recherche Scientifique, Énergie, Matériaux et Télécommunications, Varennes (QC) Canada. Since January 2014 he holds the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage. He received MSc and PhD degrees from the University of Rome “La Sapienza” in 1996 and 2001.

He is Member of the European Academy of Sciences, Fellow of the Royal Society of Canada, of the American Physical Society, of the American Association for the Advancement of Science, of SPIE, of the Royal Society of Chemistry and of the Engineering Institute of Canada among others.

He has received several awards, including a Friedrich Wilhelm Bessel Award (Alexander von Humboldt Foundation), the Rutherford Medal in Chemistry (Royal Society of Canada), the Herzberg Medal (Canadian Association of Physics), the NSERC EWR Steacie Memorial Fellowship and the José Vasconcelos Award for Education (World Cultural Council).
Abstract:
The research work of the past 30 years was dealing with High Temperature Corrosion (Oxidation, Nitridation, Carburization, Metal Dusting, Sulphidation, Halogenization, Synergies). Special focus was, e.g. on the Mechanical Properties of Protective Surface Scales and Coatings as well as on the Interaction of Corrosion and Creep providing a deep understanding of the synergistic mechanisms determining high temperature corrosion under complex (industrial) conditions. The results on the fundamental understanding were used for the Development of Advanced Protective Coating Systems (Sputter Coatings, Thermal Spray Coatings, Multi-elemental Co-Diffusion Coatings, Thermal Barrier Coatings, Nano-Coatings, High Temperature Sensor Coatings). Some of these coatings were based on unique approaches that had not been used so far (e.g. catalytic poisoning of the surface against metal dusting, beneficial halogen effect etc.).

Biography:
Prof. Michael Schütze received his Diploma as an Engineer of Materials Science from the University of Erlangen-Nürnberg in 1978, his degree of a Doctor of Engineering Sciences in 1983 and that of a private lecturer in 1991, both from RWTH Aachen University. In 1991 he became head of the High Temperature Materials Research Group at Karl-Winnacker-Institut der DECHEMA in Frankfurt and 1996 head of the entire institute. In 1998 he received the title of a professor at RWTH Aachen University. Since 2012 he is Chairman of the Executive Board of DECHEMA Research Institute in Frankfurt. His honors are: Friedrich-Wilhelm-Award of RWTH Aachen University, Elected Conference Chair of the Gordon Research Conference on Corrosion, Rahmel-Schwenk-Medal of GfKORR, Otto von Guericke-Award of AiF, Cavallaro Medal of EFC/UoF, U.R. Evans Award of ICorr, Past President World Corrosion Organization (WCO), Past President European Federation of Corrosion (EFC), editorial board member of 6 scientific journals.