



ISOBC NEWSLETTER

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ISOBC Newsletter

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Iran Society of Biophysical Chemistry

Scientific reflections from scientists in the area of Biophysical Chemistry

Prepared by E. Homami, Sh. Kialashaki, M. Aghamolaei, Y. Sajadimehr, N. Moradi, N. ElmiGhiasi, M. Qafary, N. Pishkari, X. Khosrozadeh

Institute of Biochemistry and Biophysics, University of Tehran, Tehran, Iran

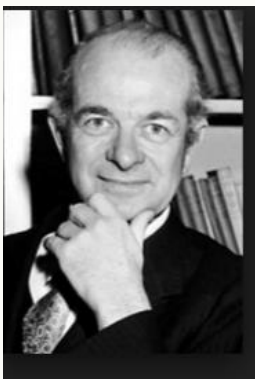


Theodor Svedberg was born at Fleräng, Valbo, in the county of Gävleborg, Sweden on August 30, 1884. He received his education from the Köping School, the Örebro High School and Gothenburg Modern School. In December 1903, he passed his student examination, before matriculating and beginning his lifelong association with Uppsala University in January 1904. He received his Bachelor of Arts degree in 1905, and his Master's degree in 1907 and in 1908, obtained the title of Doctor of Philosophy. In 1905, Svedberg accepted a post as assistant in the Chemical Institute at Uppsala and in 1907 became lecturer in chemistry in the university. He obtained a special appointment in 1909 as lecturer and demonstrator of physical chemistry and in 1912 he was chosen as a Professor of Physical Chemistry at the University of Uppsala. He was made Professor Emeritus in 1949, since when he has been Director of the Gustaf Werner Institute for Nuclear Chemistry in the University. In order to study sedimentation, he constructed his well-known ultracentrifuge, where large molecules in solution, such as polymers, carbohydrates and proteins have been studied. In the ultracentrifuge, the large molecules are put under the influence of centrifugal forces up to about 106 gravity. The findings were related to molecular shape and size. He showed that the molecules of certain pure proteins are all of one size and demonstrated the use of the ultracentrifuge to detect the presence of contaminants. Svedberg has contributed a large number of scientific papers to Swedish and foreign journals on high molecular solutions and colloid, radiation biology and nuclear chemistry. He won the John Ericsson Medal in 1942 and in 1944 the Berzelius Medal, and the Medal of the Franklin Institute in 1949. For his studies on the disperse systems he won the Nobel Prize in 1926. Svedberg passed away on February 25, 1971 [1].



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Linus Carl Pauling was born in 1901 in Portland, Oregon. He entered the Oregon State College in 1917, receiving the degree of B.Sc. in chemical engineering in 1922. In 1925 he was awarded a Ph.D. in chemistry, with minors in physics and mathematics. In 1921 he suggested, and attempted to carry out, an experiment on the orientation of iron atoms by a magnetic field. Pauling had numerous positions in professional societies in the U.S.A, in many European countries, as well as India, Japan and Chile. Several books have come from his pen, ranging from his most popular one *The Nature of the Chemical Bond*, to *The Structure of*

Molecules and Crystals via *General Chemistry*. He has many publications in the fields of experimental determination of crystals structures by X-rays diffraction. Pauling was one of the founders of the fields of quantum chemistry and molecular biology [8] and has worked on DNA's structure. The Nobel Prize in Chemistry (1954) was awarded to Linus Pauling "for his research into the nature of the chemical bond and its application to the elucidation of the structure of complex substances". In 1963, he was winning his second Nobel Prize in peace. Linus Carl Pauling passed away in 1994[2].

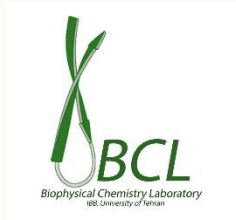
1. From Nobel Lectures, Chemistry 1922-1941, Elsevier Publishing Company, Amsterdam, 1966 This autobiography/biography was written at the time of the award and first published in the book series *Les Prix Nobel*. It was later edited and republished in *Nobel Lectures*.
2. Rich, A. (1994). "Linus Pauling (1901–1994)". *Nature*. 371 (6495)





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30th Anniversary of Biophysical Chemistry Laboratory

The Biophysical Chemistry Laboratory (BCL) (bcl.ut.ac.ir) was established in 1986 in the Institute of Biochemistry and Biophysics (IBB) as the main base and the mother of Biophysical Chemistry in Iran with the aim of creating a new and widespread research area of Thermodynamics of Protein Denaturation and Biomacromolecular Interactions. About thirty years efforts on studies and developments on different area of research, led to publication of hundreds of authoritative scientific articles in international journals and training of more than 100 enlightened alumni recruited in prestigious universities and scientific centers as faculty members. Beside this, BCL is an appropriate place for the promotion of the research and science in the field of Biophysical Chemistry, Biochemistry, Biophysics, Enzyme Biomimetics and Biotechnology. The Biophysical Chemistry Laboratory is the selected and potential core laboratory of the University of Tehran. This laboratory is the scientific walkway for researcher in the fields of Biophysical Chemistry, Biophysics and Biochemistry and is one of the first admission centers for foreign and domestic post-doctoral researchers at University of Tehran.

BCL is the place of origin of Iran Society of Biophysical Chemistry (isobc.com), Center of Excellence in Biothermodynamics (cebiotherm.ut.ac.ir), UNESCO Chair on Interdisciplinary Research in Diabetes (ucird.ut.ac.ir), and other Scientific Institutional Conditions in Iran. BCL is an advanced nano-laboratory with accurate equipment, skilled technicians and capable of serving linked with Iran Nanotechnology Laboratory Network (INLN) (nanolab.ir). BCL is accessible to INLN and it is ready to make a good service in various aforementioned area.

Many students, researchers, and faculty members from this laboratory have been awarded with scientific national and international prizes and honors. This lab has also been collaborating with reputable universities and research centers and scientists around the world from the beginning. For more information see "bcl.ut.ac.ir".

On the occasion of 30th anniversary of the establishment of the laboratory, a special ceremony will be held on 4th November 2017 in the Symposium "Protein folding and stability" that will be held from Nov 2-4, 2017 at University for Advanced Studies in Basic Sciences, Zanjan.

***Prepared by: Maryam Nourisefat, PhD
Postdoctoral Research
IBB, University of Tehran***



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3rd IASBS Symposium in Biological Sciences **Protein Folding and Stability** **Zanjan, Iran, November 2-4, 2017**

The department of biological sciences at IASBS holds annual symposia on frontiers of different biological subjects. Protein folding and stability is involved in regulating activity of proteins within a cell. It also plays an important role in specific cellular processes including protein localization, cell cycle regulation, and immune response. Diseases such as cystic fibrosis, many allergies, and some types of cancer are arisen from incorrect folding of proteins. On the other hand, misfolded proteins that escape cellular control mechanisms form aggregates inside and (more commonly) outside the cell. Formation of protein aggregates has been associated with increasing number of diseases including Alzheimer's and Parkinson's diseases, the spongiform encephalopathies, and type II diabetes. According to the above-mentioned importance of the field, the theme of our 3rd symposium in biological sciences will be "Protein Folding and Stability" and we attempt to provide a forum for the presentation of the newest findings in this area on November 2-3, 2017. Outstanding national and international scientists are invited to provide lectures. We are also glad to be the host of 30th annual meeting of "Biophysical Chemistry Laboratory (BCL)" on November 4, 2017. BCL is supervised by Professor Ali Akbar Moosavi-Movahedi, Professor of Biophysical Chemistry at the Institute of Biochemistry and Biophysics (IBB), University of Tehran, Iran. We hereby welcome all of you who are interested in the subject to attend this symposium and also the 30th BCL anniversary and share with us your research, enthusiasm, and valuable presence. Both experimental and theoretical approaches are encouraged and welcomed.

Institute for Advanced Studies
in Basic Sciences

3rd IASBS Symposium in Biological Sciences

Protein Folding and Stability

Department of Biological Sciences, IASBS, Zanjan, Iran
November 2-4, 2017

Protein folding and stability has a determining role in biological processes. This field is the focus of interest for many interdisciplinary researchers. Both theoretical and experimental approaches in the field are welcomed in the 3rd IASBS Symposium in Biological Sciences.

National and International experts will provide lectures in Protein folding, stability and aggregation.

Abstract Submission Deadline: **October 2, 2017**
Website: <https://iasbs.ac.ir/seminar/bio/biosymp/2017/>
Email: biosymp@iasbs.ac.ir
Tel: +98 2433153320-1, +989198049131

Iranian Biology Society | Iran Society of Biophysical Chemistry

Soltanyeh Dome | Kalalekhor Cave | Silver Handicraft | Sardar Bridge

Website: <https://iasbs.ac.ir/seminar/bio/biosymp/2017/>

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ISOBC joined EBSA!

On 18th July 2017, the EBSA General Assembly was held and approved that the Iranian Society of Biophysical Chemistry "ISOBC" is admitted as an Associate Member of EBSA (The European Biophysical Societies' Association).

EBSA was formed in 1984 as a non-profit making organization, with the objectives "to advance and disseminate knowledge of the principles, recent developments and applications of biophysics, and to foster the exchange of scientific information among European biophysicists and biophysicists in general".

As an Associate Member, ISOBC members will have access to all the benefits of belonging to EBSA, such as applying for student bursaries or support for meetings.

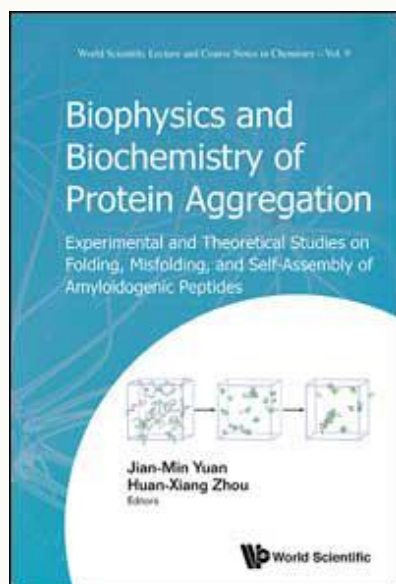
The next EBSA Congress will be held in Madrid in July 2019.

For more information: <http://ebsa.org>.



New Book

Biophysics and Biochemistry of Protein Aggregation



Experimental and Theoretical Studies on Folding, Misfolding, and Self-Assembly of Amyloidogenic Peptides

Edited by: Jian-Min Yuan (Drexel University, USA), Huan-Xiang Zhou (Florida State University, USA)

This book reviews current research on the important processes involved in neurodegenerative diseases (e.g. Alzheimer's disease) and the peptides and proteins involved in the amyloidogenic processes.

Readership: Graduate students and researchers studying the field of neurodegenerative diseases and interested in the chemical processes that occur.

More information:

<http://www.worldscientific.com/worldscibooks/10.1142/10323>

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New International Conferences:



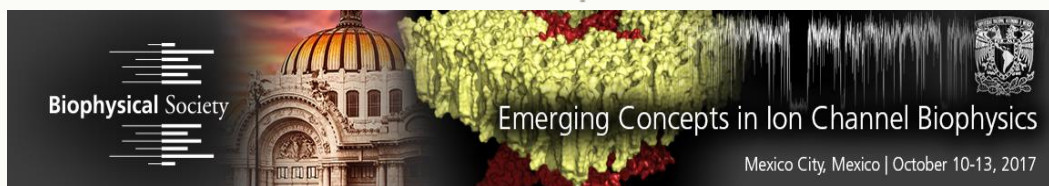
BIT'S 11TH ANNUAL WORLD
PROTEIN & PEPTIDE CONFERENCE-2018
Theme: Revealing the Secrets of Life
Time: March 26-28, 2018 Venue: Miami, USA


More information: <http://www.bitcongress.com/pepcon2018>



 **17th Euro Biotechnology Congress**
September 25-27, 2017 Berlin, Germany
Theme: Novel Trends and Innovations in Biotechnology for Making Life Better

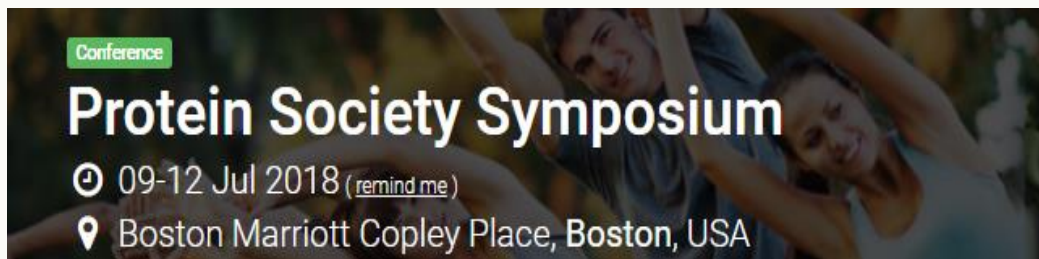

More information: <http://www.biotechnologycongress.com/europe/>



 **Emerging Concepts in Ion Channel Biophysics**
Mexico City, Mexico | October 10-13, 2017

More information: <http://www.biophysics.org/2017mexico/Home/tabid/6979/Default.aspx>

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Conference

Protein Society Symposium

🕒 09-12 Jul 2018 ([remind me](#))

📍 Boston Marriott Copley Place, Boston, USA

More information: <https://10times.com/protein-society-symposium>



IUBMB Meetings 2017

**50th Miami Winter Symposium 2017:
Diabetes: Today's Research – Tomorrow's
Therapies**

**Miami, Florida, USA – January 22-25,
2017**



More information: <http://www.miamiwintersymposium.com/>



Biophysicist in Profile

Mohammadhosein Razbin, PhD

ISOBC Member



1) Please introduce yourself as postdoctoral researcher.

I received my degree for B.Sc. in physics from Sharif University of Technology in 2009. My M.Sc in the field of General relativity was at the same university and I received the degree in 2011. In 2012, I received a research contract from Max Planck Institute for Dynamics and Self-Organization for doing my PhD in the field of biophysics therefore I moved to Germany for doing my PhD at University of Göttingen funded by MPI. I received the degree of Dr. Rer. Nat. in biophysics in 2016 which was under supervision of Prof. Annette Zippelius. I spent almost one year more at University of Göttingen for doing a short term posdoc.

As a researcher at University of Göttingen and at Max Planck Institute for Dynamics and Self-Organization, I did research in the field of physics of biopolymers.

Since I love my country with all cultural and historical features, I decided to come back to my homeland and thanks to Iran National Elite foundation, I started my second postdoc at Institute of Biochemistry and Biophysics (IBB), University of Tehran under supervision of Prof. Moosavi-Movahedi. Using the experimental insight in the group, I do theoretical research in the field of biophysics of protein fibrils and also, I do research in the field of thermodynamics of proteins.

2) How did you get familiar with Iran Society of Biophysical Chemistry (ISOBC)?

Prof. Moosavi-Movahedi introduced the ISOBC to me and already I am the member of this society.

3) How did you get acquainted with IBB, University of Tehran?

I was familiar with IBB since I was B.Sc. student at Sharif University of Technology but I became seriously familiar with research topics at IBB in March 2017. The result of our talks was a research proposal for Iran's National Elites Foundation in the field of protein fibrillation which is accepted by the foundation and currently, I am working in the topic as postdoctoral researcher at IBB.



4) What is your research area?

I am interested in physics of biopolymers, physics of protein fibrils, thermodynamics of proteins and stochastic processes in biophysics. I'm basically a theoretical biophysicist who loves to be involved in experiments.

5) What are some of your latest achievements in Biophysics?

I have one publication in physical review E with the topic of "Elasticity of a semiflexible filament with a discontinuous tension due to a cross-link or a molecular motor". It gives a theoretical method for deriving analytical expressions associated with mechanical properties of semiflexible filament attached to a molecular motor which is the basic structure of actomyosin gel within cells. Actomyosin gel is responsible for shape change and motion in cells. For instance, molecular motors can cause contraction in muscle cells by stretching or compressing the actin filaments in the network of actomyosin. In this article, we have shown that a molecular motor feels different stiffness from filament while the value of external force on filament varies. It is softer while we have compressive external force and is stiffer while we have stretching external force. This finding helps the community to understand the mechanics of actomyosin gel quantitatively.

In another publication in physical biology with the topic of "Mechanical properties of branched actin filaments", for the first time, we have derived an analytical expression for mechanical properties of branched actin filament in the presence of thermal fluctuations. Having this expression, we were able to study the stiffness of the network of branched actin filament grafted in actomyosin gel. Our result was consistent with recent experiments reporting the upper bound for the stiffness of lamellipodia of a cell. Lamellipodia is a 2 dimensional protrusion in crawling cell which promotes the motion. The results of this investigation are important steps in modeling the mechanical aspect of cell crawling.

news@isobc.com

Editor: Dr A. Ebrahim-Habibi

Executive Manager: N. Poursasan

E-mail: poursasan_n@ut.ac.ir

IT Manager: A. Mohsenimehr