Available online at www.joac.info

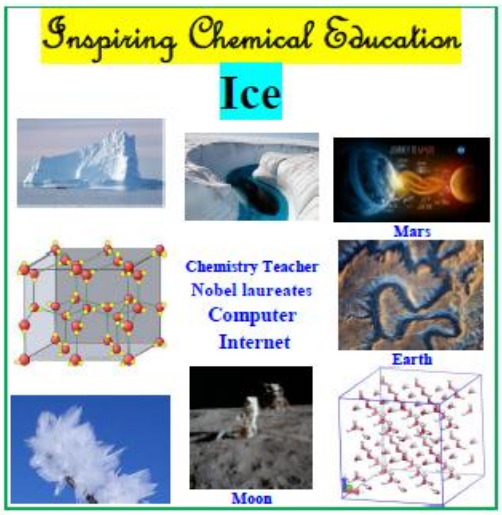
ISSN: 2278-1862

Journal of Applicable Chemistry

2017, 6(6):1240-1247

(International Peer Reviewed Journal)

Chemical Education



6. Nobel prizes in 2017

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The innovative sparkles of science of this decade are boson, mass for neutrinos and gravitational waves. All the three were out of brain storming processes of mathematicians, knowledge-based computational practitioners and theoretical physicists of nineteenth century. Thus, it was their virtual start awaiting confirmation. The experimental discoveries after nearly five decades to a century are a culmination of science, engineering, technology in experimental/ theoretical/ simulation/ computational tools. Now, they stand as a testimony of state-of-art /knowledge instrumentation, probes and high end computer hardware/ software/communication. The driving force is governmental science programs aimed at inquiry into truth of the existence/absence of fundamental particles/their characteristics. The design/execution of workflow had been by committed genius minds of many laboratories spread over the globe. The torch was towards a single point focus towards the prime truth of existence of things around or far off in space and now (today) as well as billions of years ago in time domain of Mother Nature. The evolving scientist perceives (what it is/what it is not?) through state-of-knowledge instruments/science, draws inferences, pools up hypotheses/theories/models, compare with ground truth and refines models and continue the saga of exploration. The interaction or non-interaction and their consequences are the cause of dynamic changes of visible Universe, a perineal transformation of Big-ocean of energy.

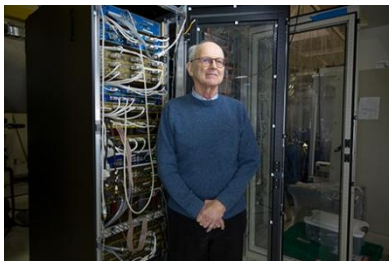
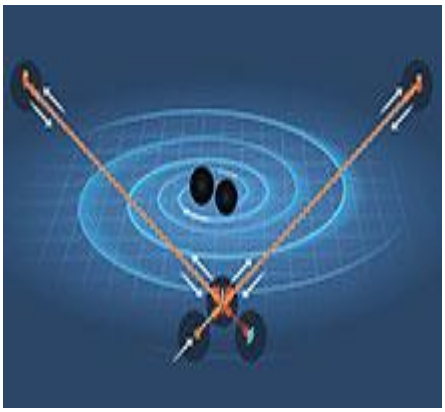
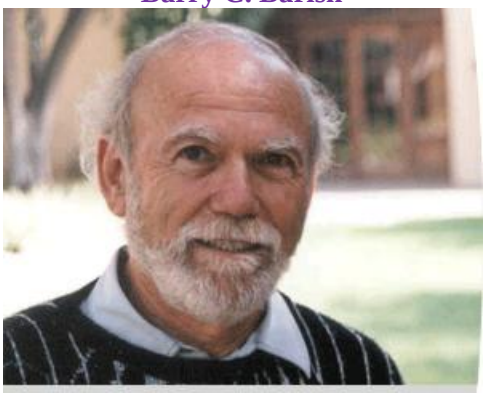
From a common scientific learner/pursuers stand point, they are exorbitant to perceive with naïve analogies. We and universe itself are in an ocean of neutrinos, bosons and gravitational waves. But, we cannot perceive them through our five senses. The nature gifted intelligence, man-made logic and accumulated knowledge in probing nature through science window resulted in proposing their existence.

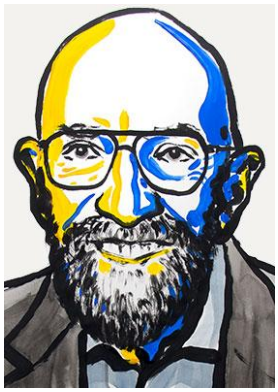
Einstein himself added a tag of caution that gravitational waves cannot be experimentally proved as they do not interact with matter.

The focal themes of contribution, county/year of birth of Nobel Prize winners of 2017, affiliation of institute/employer at the time of announcement of award are incorporated in Table 1. Nobel Laureates are designers/ sculptors of noble science windows of human knowledge, metaphorically, golden sky scraping castles (Fig 1). Each window is a third eye to peep through/ understand the amazing nature of thousand (zillion) doored nature. The common man/ scientist/ expert of course, is also an integral part in time-space continuum.

Table 1(a): Focal theme of Nobel Prize for **Physics** in 2017

Probe	LIGO detector	Obj_achieved	Experimental detection of gravitational waves
Prime_Method	Experimental;	Inspiration/ motivation	Theoretical postulation by Einstein

Focal theme	Affiliation	Nobel Laureate Photograph Year and place of birth	Prize Share
	LIGO/VIRGO Collaboration, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA	**Rainer Weiss**  1932, Berlin, Germany	1/2
	LIGO/VIRGO Collaboration, California Institute of Technology (Caltech), Pasadena, CA, USA 	**Barry C. Barish**  1936, Omaha, NE, USA	1/4
		Kip S. Thorne	1/4



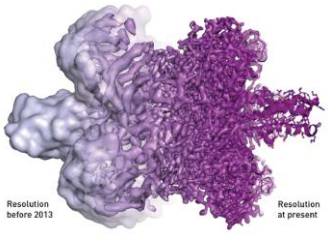
1940, Logan, UT, USA

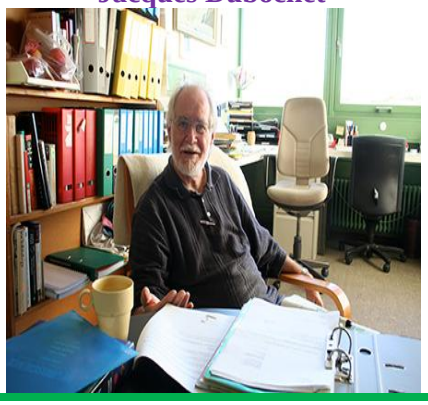
Chemistry: Nature during its evolution prepared ninety chemical elements and zillions of chemical compounds in animate and inanimate world. The scientists' chemical knowledge is culmination of results of laboratory/ thought experiments using material moieties with others, electromagnetic radiation under varying influence of temperature, pressure, magnetic/electric fields and gravity. In a nut shell, chemistry is how a human expert perceives and conceives a thin energy band binding (with covalent bond) nature_made and/ or man_made atoms within a molecule or different molecular species in living and non-living matrices.

Table 1(b): Focal theme of Nobel Prize for Chemistry in 2017

Probe	Cryo-electron microscopy	Obj_achieved	High-resolution molecular structure
Species	Biomolecules (Proteins, virus etc.)	Prime_Method	Experimental;
Phase	Solution		
Necessity	To surmount inadequacy of X-ray, NMR, electron-microscopy for 3D-sturcutre of proteins in aqueous solution to atomic level accuracy		

Affiliation	Nobel Laureate Photograph Year and place of birth	Prize share
University of Lausanne, Lausanne, Switzerland	**Jacques Dubochet**	1/3





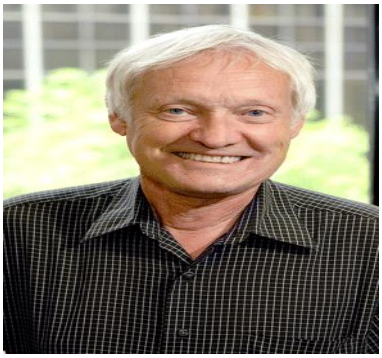
	1942, Aigle, Switzerland **Richard Henderson**  1945, Edinburgh, Scotland	
MRC Laboratory of Molecular Biology, Cambridge, United Kingdom		1/3
	Joachim Frank  1940, Siegen, Germany	
Columbia University, New York, USA		1/3

Table 1(c): Focal theme of Nobel Prize for **Physiology/Medicine** in 2017

Obj_achieved : Molecular mechanisms controlling the circadian rhythm

Affiliation	Nobel Laureate Photograph Year and place of birth	Prize Share
Brandeis University in Waltham	**Jeffrey C. Hall**	1/3

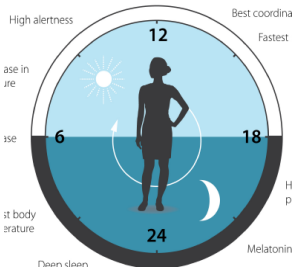
Affiliation	Nobel Laureate Photograph Year and place of birth	Prize Share
	 1945 New York USA	
Brandeis University, Waltham, MA, USA, Howard Hughes Medical Institute	**Michael Rosbash**  1944 Kansas City, USA	1/3
Rockefeller University in New York USA	**Michael W. Young**  1949 Miami, FL, USA	1/3

Table 1(d): Focal theme of Nobel Prize for **Economic Sciences** in 2017

Obj_achieved : Behavioural economics

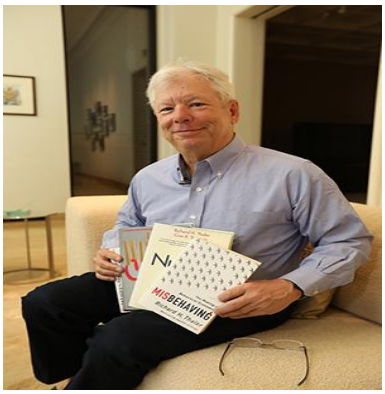
Nobel Laureate Photograph Year and place of birth	Prize share
Richard H Thaler  **1945, East Orange, NJ, USA**	1/1

Table 1(e): Focal theme of Nobel Prize for Literature in 2017

Probe :	Emotional force	Obj_achieved :	Uncovered the abyss beneath our illusory sense of connection with the world
Necessity	To wipe out psychological myriads		
Prospects	Free from fear, agony and distress leading to mental health		

Focal theme	Nobel Laureate Photograph Year and place of birth	Prize share
Uncovered the abyss beneath our illusory sense of connection with the world in novels of great emotional force	**Kazuo Ishiguro**  1954, Nagasaki, Japan	1/1

Table 1(f): Focal theme of Nobel Prize for **Peace** in 2017

Instrument:	Treaty	Means:	Ground breaking efforts
Obj_achievable	Prohibition/avoidance of use of fission/fusion nuclear products in warfare		
Necessity	To be away from catastrophic humanitarian consequences of nuclear warfare		
Prospects	World free from catastrophic threats of nuclear/ chemical/ biological tools, promoting a world of peace for life /life supporting systems		

Focal theme	Name of Organisation Icon	Prize share
 Signing ceremony for the UN Treaty on the Prohibition of Nuclear Weapons at the United Nations Headquarters, New York, 20 September 2017	**International Campaign to Abolish Nuclear Weapons (ICAN)** 	1/1

Fig 1 : Evolution of Knowledge in time and space (metaphorically skyscrapers)

Nobel Prizes are high_tides (or lighthouses) in Ocean of Oceans of knowledge

- Since 1901, Nobel Prize winners are more than 900, among whom around 50 are women.
- The scientific achievements in physics, chemistry or physiology/medicine (PCPM) proven for "the Greatest Benefit to Mankind" had been honored every year by awarding Nobel Prizes to a maximum number of three scientists in each of these science windows.
- Three more disciplines in the list are Literature, Peace and Economics.
- Scientists alive (at the time of announcement) are selected for Nobel

Prizes.

The Nobel prize ceremonies take place every December in Stockholm (Sweden). The awards are given away by Chairman of the Norwegian Nobel Committee in the presence of King of Norway.

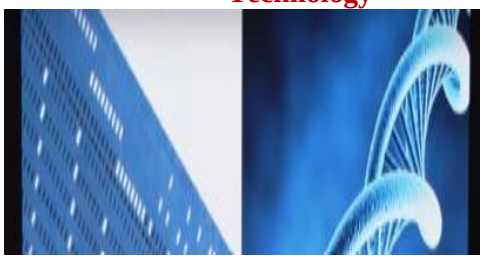
Burj Khalifa, height: 2,722 ft; in Dubai (UAE)
World's tallest

I (eye, instrument and Intelligence) see evolution of nature in space-time continuum

Time in Space

Brain waves – Brain child (Thoughts)

Technology



Science

Tallest in the world from 1971 to 1973
World Trade Center-1: Height. 1,368 feet
World Trade Center-2: Height. 1,362 feet

Tallest skyscraper in the Western Hemisphere
Freedom Tower (One World Trade Center);
Height: 1,776 feet;

Information Source: http://www.nobelprize.org/