



Departamento de Tecnología Electrónica



Charla Coloquio sobre la inserción de la mujer en carreras tecnológicas

Carmen de Trazeqnies Otero

Eva González Parada

17 de noviembre de 2005



Radioactive materials

Marie Curie-Sklodowska

Marie Curie-Sklodowska was awarded two Nobel Prizes: the physics prize in 1903 and the chemistry prize in 1911

Marie Curie was a Polish physicist and chemist who lived between 1867-1934. Together with her husband, Pierre, she discovered two new elements (radium and polonium, two radioactive elements that they extracted chemically from pitchblende ore) and studied the x-rays they emitted. She found that the harmful properties of x-rays were able to kill tumors. By the end of World War I, Marie Curie was probably the most famous woman in the world. She had made a conscious decision, however, not to patent methods of processing radium or its medical applications.



Participants at the 1927 Solvay Conference

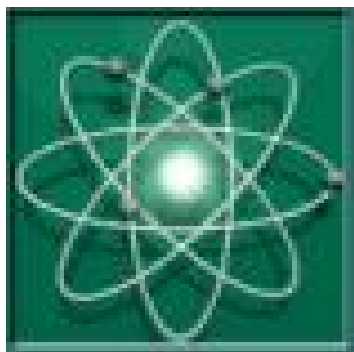


Artificial Radioactive Isotopes

Irene Joliot - Curie

JEAN-FRÉDÉRIC JOLIOT and IRÈNE CURIE

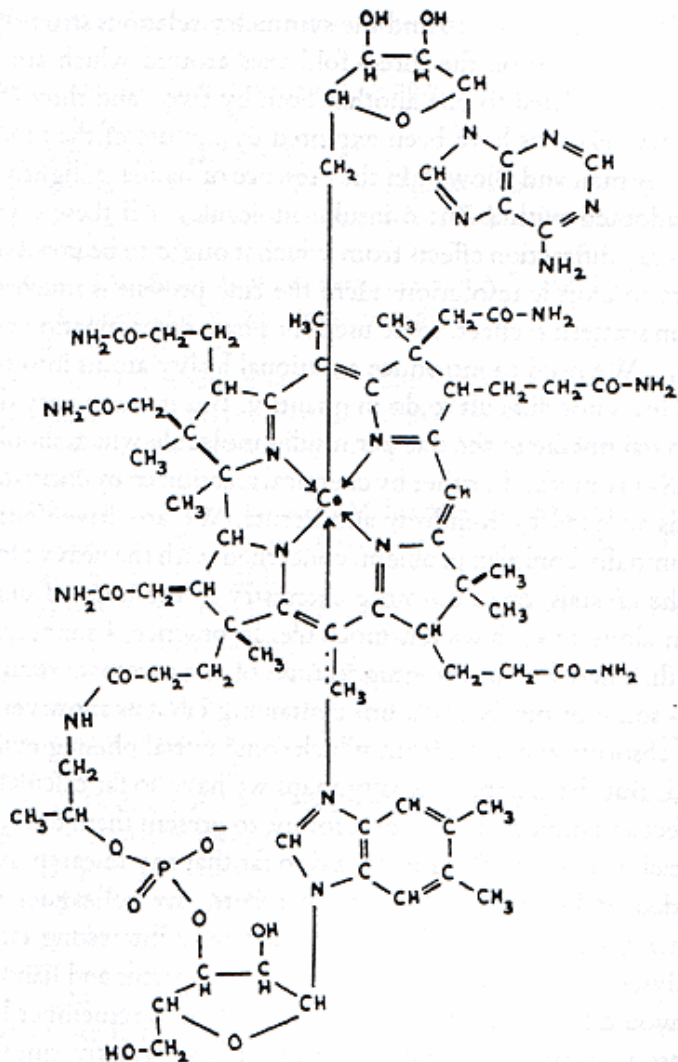
(respectively b. March 19, 1900, Paris, France--d. Aug. 14, 1958, Arcouest; b. Sept. 12, 1897, Paris--d. March 17, 1956, Paris), French physical chemists, husband and wife, who were jointly awarded the 1935 [Nobel Prize for Chemistry](#) for their discovery of new radioactive isotopes prepared artificially



Determinations by X-ray techniques of the structures of important biochemical substances



Dorothy Crowfoot Hodgkin

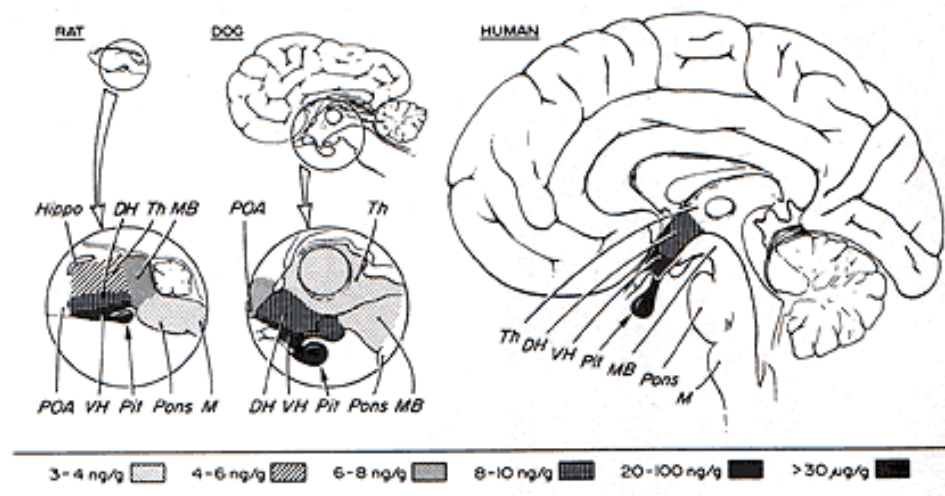


A British biochemist and crystallographer and the 1964 Nobel Prize winner in Chemistry for "her determination by X-Ray techniques of the structures of biologically important molecules." Hodgkin used X-Rays to find the structural layouts of atoms and the overall molecular shape of over 100 molecules including: penicillin, vitamin B-12, vitamin D, and insulin.



Radioimmunoassay

Rosalyn Yalow (born in 1921)



Rosalyn Yalow (born in 1921), Ph.D., is the inventor of radioimmunoassay (RIA), a powerful tool for determining any minute substance of biological interest in the urine and blood.

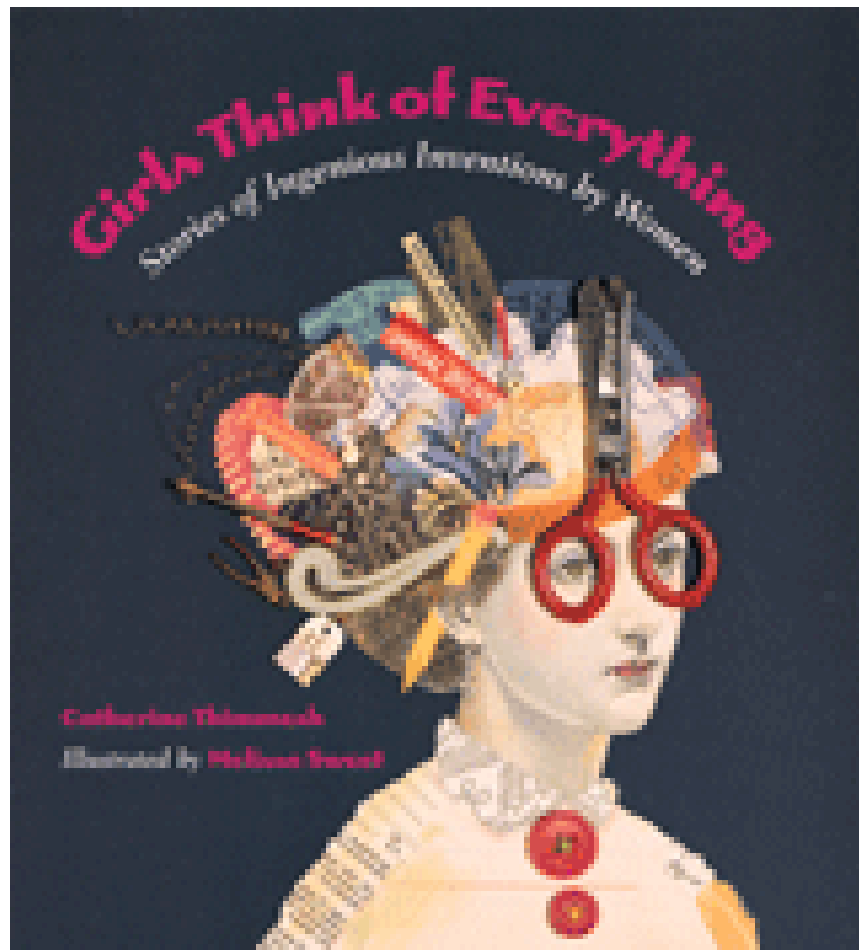
Her work included finding ways to use radioisotopes in medicine, and in particular, developing with other scientists a way to measure the amount of proteins like insulin in the body, using radioisotopes.

Premios Nobel otorgados a mujeres en disciplinas científicas

Curie, Marie Sklodowska Polonia, 1867- Francia, 1934-15	Física, 1903	✓ Investigaciones conjuntas con Pierre Curie sobre el fenómeno de la radiación
Curie, Marie Sklodowska Polonia, 1867- Francia, 1934	Química, 1911	✓ Descubrimiento del radio y el polonio, y el estudio de la naturaleza y los componentes de este sorprendente elemento
Joliot-Curie, Irene Francia 1897-1956	Química, 1935	✓ Síntesis de nuevos elementos radiactivos
Cori, Gerty Theresa Praga, 1896- USA, 1957	Medicina, 1947	✓ Descubrimiento del curso de la conversión catalítica del glucógeno.
Crowfoot Hodgkin, Dorothy Gran Bretaña, 1910-1994	Química, 1964	✓ Determinación, mediante técnicas de rayos-X, de la estructura de importantes sustancias bioquímicas.
Goeppert-Mayer, Maria Polonia, 1906-USA, 1972	Física, 1972	✓ Teoría de la estabilidad del núcleo atómica, debida a que los protones y los neutrones están dispuestos en órbitas relativamente fijas.

Premios Nobel otorgados a mujeres en disciplinas científicas (y 2)

Yalow, Rosalind USA, 1921	Medicina 1977,	✓ Técnica de radioinmunoensayo. Premio conjunto con Solomon A. Berson .
McClintock, Barbara USA, 1902-1992	Medicina, 1983	✓ Descubrimiento de elementos genéticos móviles
Levi-Montalcini, Rita Italia, 1909	Medicina, 1986	✓ Descubrimientos sobre los factores de crecimiento.
Elion, Gertrude B. USA, 1918-1999	Medicina, 1988	✓ Descubrimientos sobre los principios importantes para el tratamiento de drogas. Premio conjunto con George Hitchings
Nüsslein-Volhard, Christiane Alemania, 1942	Medicina, 1995	✓ Descubrimientos sobre el control genético del desarrollo temprano de los embriones.



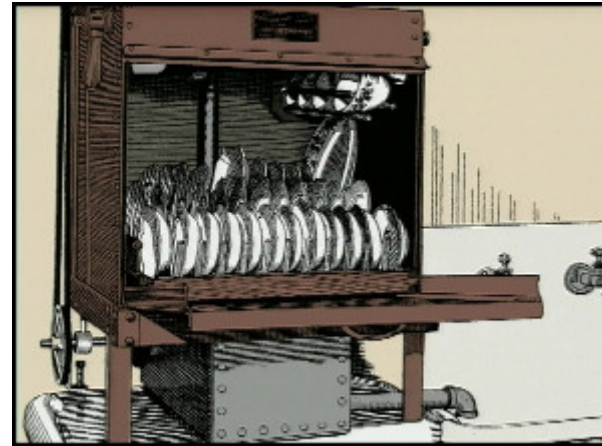
**Mujeres Inventoras,
¿desde cuándo?**



Dishwasher

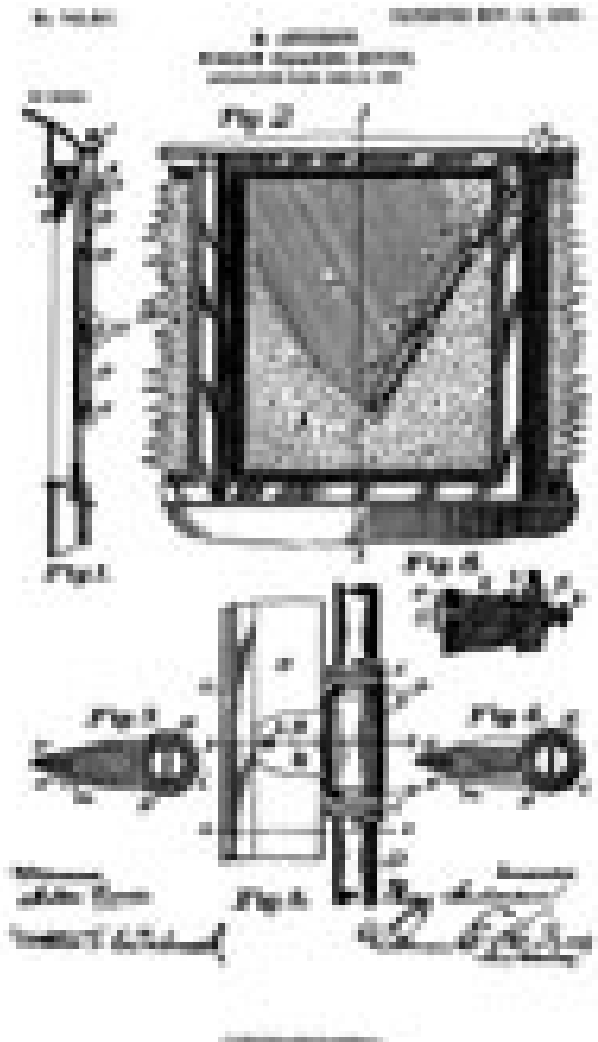
Josephine Cochran

In 1886, Josephine Cochran proclaims in disgust "If nobody else is going to invent a dishwashing machine, I'll do it myself." Josephine Cochran had expected the public to welcome the new invention, which she unveiled at the 1893, World's Fair, but only the hotels and large restaurants were buying her ideas. It was not until the 1950s, that dishwashers caught on with the general public. Josephine Cochran's machine was a hand-operated mechanical dishwasher. She founded a company to manufacture these dish washers, which eventually became KitchenAid.



Windshield wiper

Mary Anderson



Prior to the manufacture of [Henry Ford's](#) Model A, Mary Anderson was granted her first patent for a window cleaning device in November of 1903. Her invention could clean snow, rain, or sleet from a windshield by using a handle inside the car. Her goal was to improve driver vision during stormy weather - Mary Anderson invented the windshield wiper.

Another woman inventor named Charlotte Bridgwood invented the first automatic windshield wiper. Charlotte Bridgwood, president of the Bridgwood Manufacturing Company of New York, patented her electric roller-based windshield wiper called the "Storm Windshield Cleaner" in 1917. However, her product was not a commercial success.



Improvements on Locomotives

Mary Walton

In 1879, Mary Walton developed a method of deflecting smoke stack emissions through water tanks and later adapted the system for use on locomotives.

Mary Walton also devised a noise reduction system for elevated railroads in New York City. She invented a sound-dampening system that cradled the track in a wooden box lined with cotton and then filled with sand. She received a patent for the system on February 8, 1881, and later sold the rights to the Metropolitan Railroad of New York City.



Matemática, Astrónoma, Filósofa e... Inventora



Hypatia de Alejandría
?- 415 D.C

Es la primera mujer de ciencia cuya vida está bien documentada. Aunque la mayoría de sus escritos se ha perdido, existen numerosas referencias a ellos

La educó su padre, [Theón](#), matemático y astrónomo que trabajaba en el Museo. Según la leyenda, estaba decidido a que se convirtiera en "un ser humano perfecto", y esto en una época en que se solía considerar que las mujeres eran menos que humanas.



En las cartas de Sinesio están incluidos sus diseños para varios instrumentos científicos, incluyendo un **astrolabio plano**, un aparato para **destilación de agua**, un instrumento para medir el **nivel del agua**, y un **hidrómetro** graduado de latón para determinar la **densidad de los líquidos**



Analytical Engine

Lady Ada Byron Lovelace (1815-1852),

Ada Byron was the daughter of the Romantic poet Lord Byron and Anne Isabelle Milbanke. Ada's complex inheritance became apparent as early as 1828, when she produced the design for a flying machine. It was mathematics that gave her life its wings

One of the gentlemanly scientists of the era was to become Ada's lifelong friend. Charles Babbage, Lucasian professor of mathematics at Cambridge

Babbage had made plans in 1834 for a new kind of calculating machine Ada suggested to Babbage writing a plan for how the engine might calculate Bernoulli numbers. This plan, is now regarded as the first "computer program." A software language developed by the U.S. Department of Defense was named "Ada" in her honor in 1979.

Ada INFORMATION CLEARINGHOUSE



Vol VIII, No. 2

NEWSLETTER



June 1990



The first compiler, COBOL Development

Grace Hopper (1906-1992)

Mathematician **Grace Hopper** (1906-1992) designed in 1952 the first compiler, the system that enables the computer to "read" its own programs from keyed instructions. The invention of the compiler was a sensational breakthrough, that opened up a new era of limitless horizons for automatic programming. Additionally and with the help of her working team, she was responsible of the development of COBOL programming language. Grace Hopper was Rear-Admiral of the US Navy.

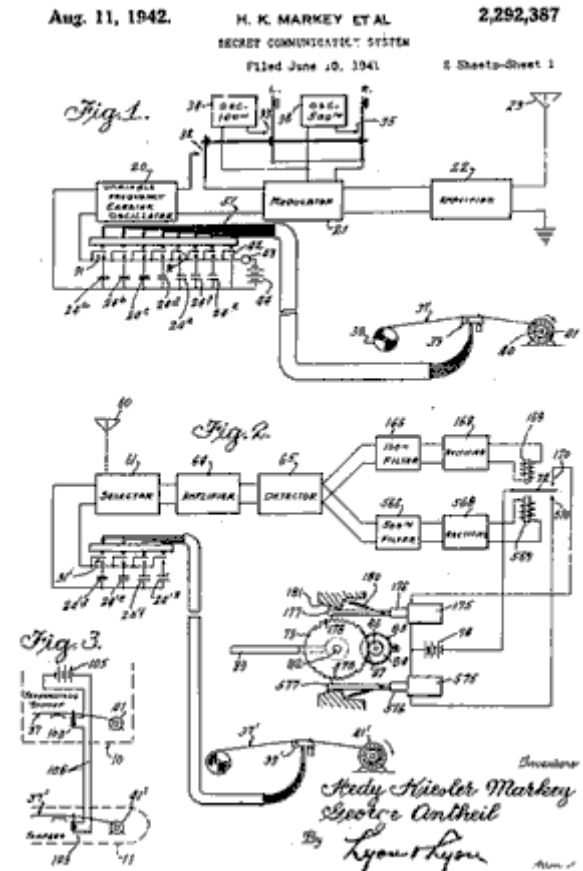




Spread spectrum

Hedy Lamarr

Silver Screen superstar Hedy Lamarr (born Hedwig Kiesler Markey) with the help of composer George Antheil invented a secret communication system in an effort to help the allies defeat the Germans in World War II. The invention, patented in 1941, manipulated radio frequencies between transmission and reception to develop an unbreakable code so that top-secret messages could not be intercepted. The technology called spread spectrum, now takes on many forms. However, all the spread spectrum that we use today directly or indirectly, flows from the invention created by Hedy Lamarr.



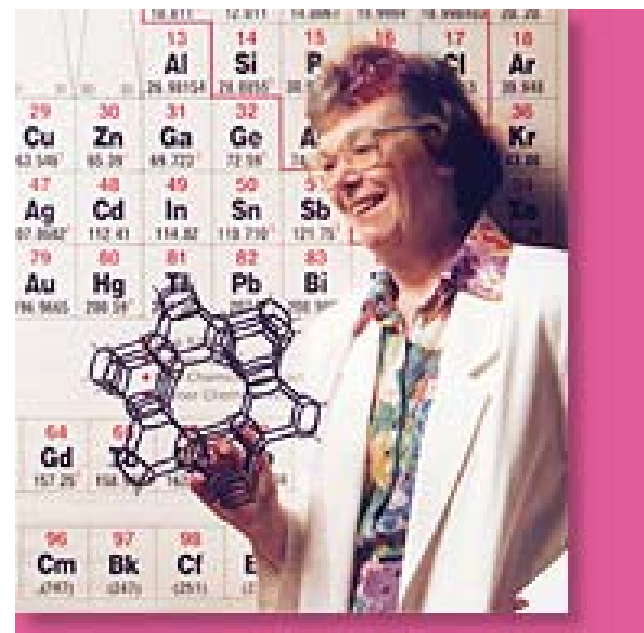


Petroleum refining method

Edith Flanigen

Edith Flanigen is one of the most inventive chemists of all time. She had a 42-year career at Union Carbide. In 1956, Edith Flanigen began to work on the emerging technology of "molecular sieves," crystalline structures that contain molecule-sized pores. The compounds with their tiny pore sizes can be used to filter and break down crude oil during the refining process.

Edith Flanigen's work made the production of Zeolyte Y (an alumino-silicate) commercially viable. Her molecular sieves have made gasoline production more efficient, cleaner, and safer worldwide. Edith Flanigen's more recent work on alumino-phosphates has applications for lubricating oils.





PRODUCTION OF SAFE FUEL AND HYDRAULIC OIL FOR AIRPLANES

Ms Azam Shaghaghi Verzeghani

Patent granted: Iran September 19, 2004.

The problem to be solved:

Having tested the micro-organisms that consume hydrocarbon in the fuels used by airplanes, I found out that these bacteria can cause disorders in the gages and electronic sensors

Description:

A biological method to reduce the contamination of air plane fuel and hydraulic oil.

Application:

Refinery, aircraft, aerospace, chemistry.





Nonreflective glass.

Katherine Blodgett 1898 - 1979

She discovered a way to apply the coatings layer by layer to glass and metal. The thin films, which naturally reduced glare on reflective surfaces, when layered to a certain thickness, would completely cancel out the reflection from the surface underneath. This resulted in the world's first 100% transparent or invisible glass. Katherine Blodgett's patented film and process (1938) has been used for many purposes including limiting distortion in eyeglasses, microscopes, telescopes, camera and projector lenses.





METHOD AND INSTALLATION OF POWER GENERATION BY OCEAN WAVE

LEE Ms Wai Fong

Patents granted: Hong Kong December 19, 2001, Patent pending USA.

The problem to be solved:

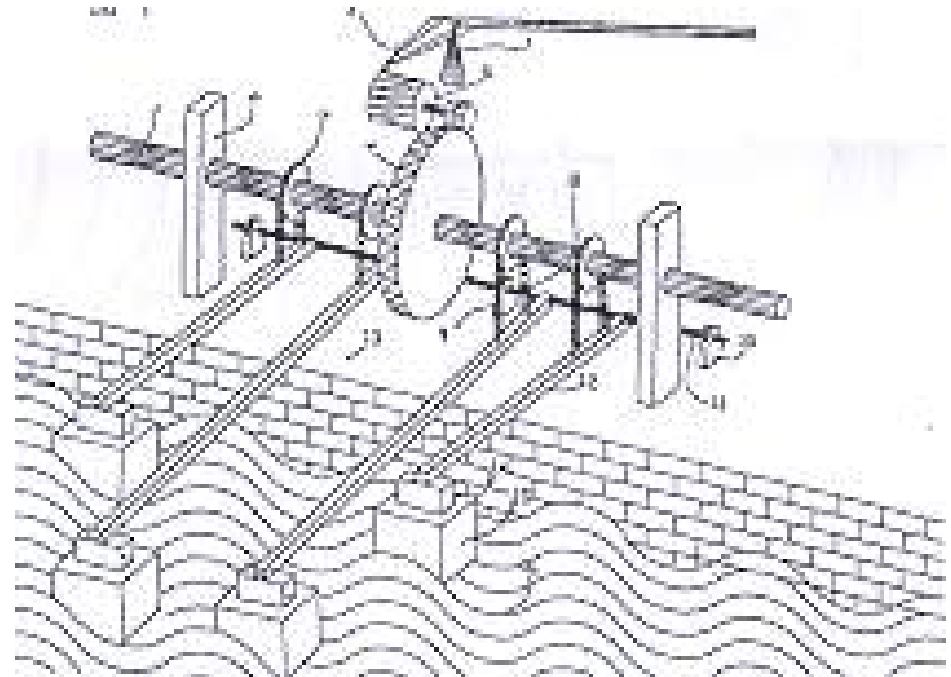
A cost effective and environmental solution to the energy demand. Wave energy in the ocean is enormous, extraction of which will ease the demand on other energy sources

Description:

The system converting the wave energy to electrical energy consists of the boater, lever, chain ratchet, wheel, flywheel, generator, cable, etc.

Application:

Power generation.



Optical analysis systems

Ellen Ochoa



Ellen Ochoa's pre-doctoral work at Stanford University in electrical engineering led to the development of an optical system designed to detect imperfections in repeating patterns. This invention patented in 1987, can be used for quality control in the manufacturing of various intricate parts. Dr. Ellen Ochoa later patented an optical system which can be used to robotically manufacture goods or in robotic guiding systems. In all, Ellen Ochoa has received three patents most recently one in 1990.





Illusion transmitter

Valerie Thomas

Valerie Thomas received a patent in 1980 for inventing an illusion transmitter. This futuristic invention extends the idea of television, with its images located flatly behind a screen, to having three dimensional projections appear as though they were right in your living room. Perhaps in the not-so-distant future, the illusion transmitter will be as popular as the TV is today. .



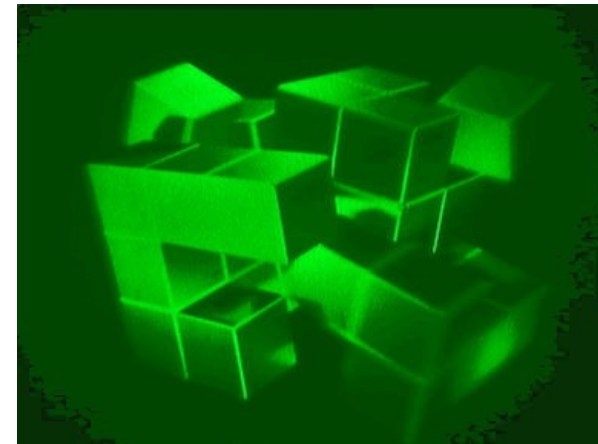


Full-color reflection hologram The Stylus

The first Windows-based computer telephony development tool (Visual Voice)

Krisztina Holly

As an undergraduate at the Media Lab at MIT, Krisztina Holly helped develop the world's first computer-generated, full-color reflection hologram. In 1991, while a graduate student in mechanical engineering with a focus on product development, Krisztina Holly co-wrote a business plan that won MIT's Entrepreneurial Competition. She also co-designed and built a head-eye vision robot and developed a robotic weld-seam-tracking program for the space shuttle main engine.

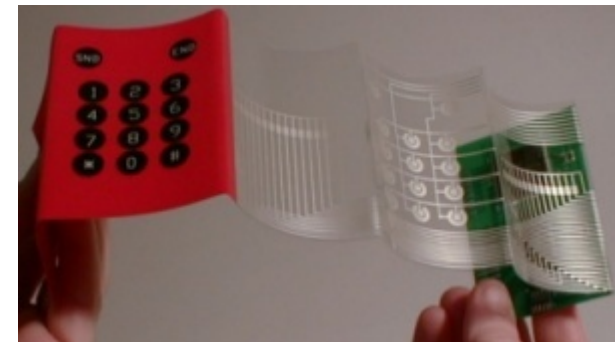
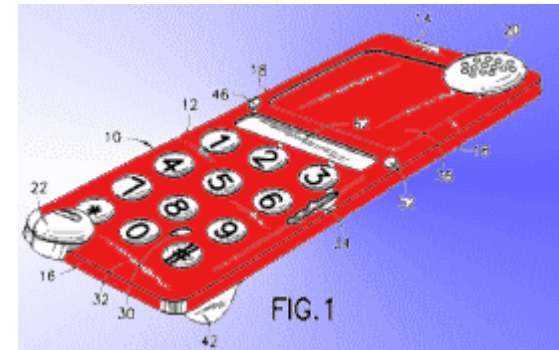




Phone-Card-Phone

Randi Altschul

The device is the thickness of three credit cards and made from recycled paper products. This is a real cell phone (outgoing messages only) with 60 minutes of calling time and a hands free attachment. .





MONOCLONAL ANTIBODY QUICK DIAGNOSTIC STRIP TECHNOLOGY

MA Dr. Lan (Ms)

Patent granted: Patents pending and published (China).

The problem to be solved:

Make an important break through in clinic diagnosis field.

Description:

Biological high-tech diagnostic product based on the technology of Mab production, immuno-chromatography and colloidal gold color displaying system. It can find out different types of hepatitis, STDs', AIDS, early stage cancer, coronary heart disease and many other diseases .

Application:

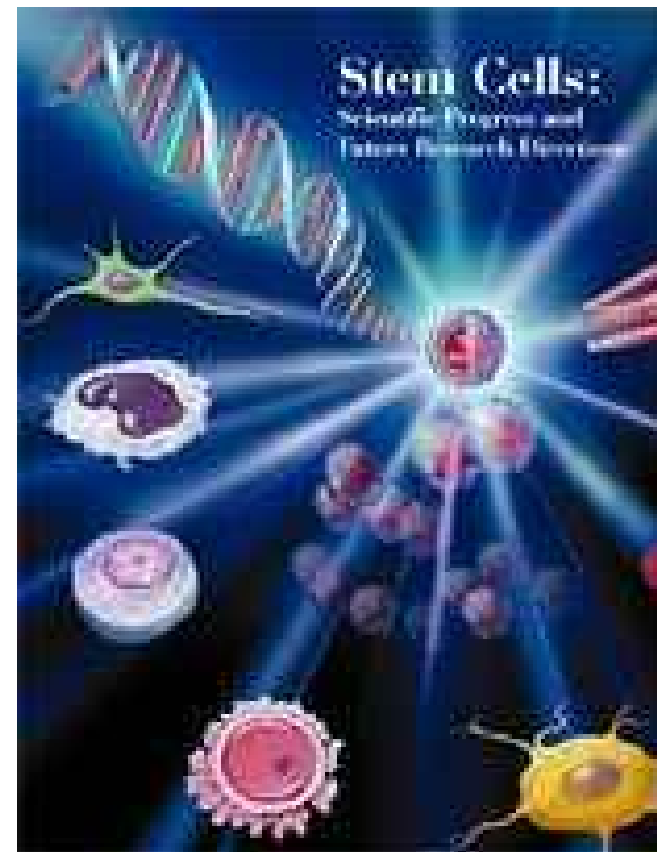
Medicine: Clinical diagnosis field .



A process to isolate the human stem cell

Ann Tsukamoto

Ann Tsukamoto is the co-patentee of a process to isolate the human stem cell; the patent for this process was awarded in 1991. Stem cells are located in bone marrow and serve as the foundation for the growth of red and white blood cells. Understanding how stem cells grow or how they might be artificially reproduced is vital to cancer research. Ann Tsukamoto's work has led to great advancements in comprehending the blood systems of cancer patients and may one day lead to a cure for the disease. Ann Tsukamoto is currently directing further research in the areas of stem cell growth and cellular biology at Stem Cells, Inc.



SHE HELD MORE THAN 125 US PATENTS

Giuliana Tesoro (born in 1921)



Giuliana Tesoro (born in 1921), Ph.D., worked in many areas of chemistry for industrial companies and was Research Professor, Polymer Chemistry, Polytechnic University, Brooklyn, New York, USA. It is said in the technical community that in the field of fiber and textile chemistry, Giuliana Tesoro is one of the most prolific scientists in the world! Her improvements and innovations include chemical compounds and processes designed to prevent static accumulation, to obtain flame-resistant fibers and permanent press properties.

LAS PIONERAS DE LA INVESTIGACIÓN OCEANOGRÁFICA ESPAÑOLA IEO, 1923-1950).



Con anterioridad al año 1936 solo encontramos a las cuatro asistentes al citado Curso: **Emma BARDÁN MATEU (1898-1992?)**, **Mercedes GARCÍA LÓPEZ (1904-1990)**, **Gimena QUIRÓS FERNÁNDEZ-TELLO** y **María Encarnación SÁNCHEZ HERRERO**. Las dos primeras embarcaron en 1926 en el velero *Príncipe Alberto de Mónaco*, convirtiéndose en las primeras mujeres españolas participantes en una campaña oceanográfica. Una de éstas (**E. BARDÁN**) fue la más prolífica de todo el grupo, pues publicó 10 artículos (período 1927-52), centrándose principalmente en aspectos pesqueros de Canarias y de Málaga. Entre los años 1941-50, se consolida el acceso de mujeres al IEO con cuatro investigadoras titulares —adscritas a los nuevos Departamentos de Química Aplicada (**M. J. DEL VAL** y **M. D. GARCÍA PINEDA**), Fisicoquímica (**M. MARTÍN RETORTILLO**) y Oceanografía Física (**M. L. GÓNZALEZ SABARIEGOS**). Durante ese decenio varias de esas jóvenes oceanógrafas desarrollaron novedosas líneas de investigación, tales como la biotecnología de alimentos, desarrollo de nuevas aplicaciones y tratamientos de los subproductos de la pesca y de las algas susceptibles de explotación industrial.

Las mujeres en la sombra





"[...] cuando una mujer, debido a su sexo, a nuestras costumbres y prejuicios, encuentra obstáculos infinitamente mayores que los hombres para familiarizarse con esos complejos problemas, y sin embargo supera estas trabas y socava en lo más profundo, indudablemente tiene el más noble de los valores, un talento extraordinario y un genio superior"

Carl Friedrich Gauss, carta dirigida a **Marie-Sophie Germain**, estudiante de matemáticas encubierta bajo el pseudónimo de **Sr. Le Blanc**, discípula aventajada de **Lagrange**.

En 1816 Germain ganó el concurso de la **Academia Francesa de las Ciencias** al explicar matemáticamente los fundamentos sobre las vibraciones de las superficies elásticas,

Fue la primera mujer en asistir a las sesiones de la **Academia Francesa de las Ciencias**.

Nunca recibió un título oficial universitario. Se le concedió un **título honorífico a título póstumo**

ALBERT EINSTEIN



MILEVA MARIĆ

Edited by
JÜRGEN BEHN AND
ROBERT SCHULMANN
Translated by
SARAH SMITH

"we finished some important work that will make my husband world famous." (1905)



Mileva Maric-Einstein

The life of Mileva Maric Einstein is a jigsaw puzzle that researchers are trying to piece together - without knowing how the final picture will look. In the last decade, newly discovered documents have offered tantalizing glimpses of the woman. But interpretation of evidence often produces bitter debate.

On the one side, Einstein is a scientific saint, and accepting Mileva as his equal would be blasphemous. On the other side, there is solid proof that Albert treated his wife disgracefully, raising the suspicion that he viewed Mileva's career with equal disregard. In this brief investigation of the facts, Mileva's life story is divided into three periods, each defined by her changing relationship with Albert. The epilogue reviews the events leading to her rediscovery in the late 1980s.

References:

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Ingenious Women: From Tincture of Saffron to Flying Machines

Deborah Jaffe , [Sutton Publishing](#), March 2005

Women, Gender and Enlightenment

Barbara Taylor, Sarah Knott, [Palgrave MacMillan](#), September 2005