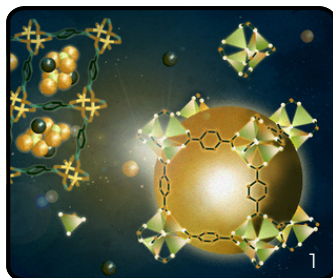


NOBEL-WINNING NANO DISCOVERIES

And how they shape our world.

Nanotechnology-enabled discoveries have transformed everyday life, and their potential to shape the future is immense. Here are a few examples of Nobel Prizes related to nanotechnology. Whether you realize it or not, nanotechnology is already part of your daily life. Learn more at nano.gov.



Metal-Organic Frameworks: A molecular “sponge”-like architecture that enables new technical solutions

These frameworks are used to separate and capture toxic chemicals, to harvest water from air, in drug delivery, and more.

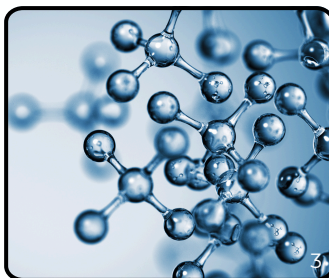
Susumu Kitagawa, Richard Robson, and Omar M. Yaghi, 2025



Quantum Dots: Nanoscale crystals that exhibit quantum behavior

Quantum dots are used in mass market applications for LED lights, display technologies, and also for ultra-precise imaging, and medical treatments.

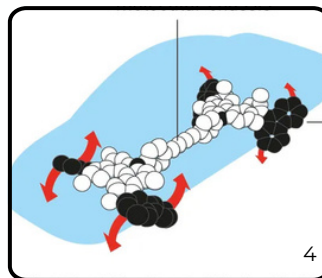
Moungi Bawendi, Louis, Brus, and Aleksey Yekimov, 2023



Click and Bioorthogonal Chemistry: Fast and precise way to “click” molecules together

These methodologies facilitate safe reactions inside living cells, which are important for medical applications.

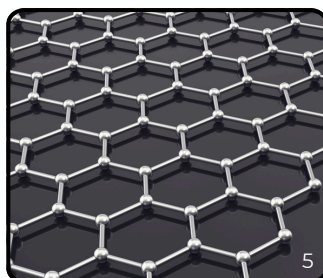
Carolyn Bertozzi (along with Barry Sharpless, and Morten Meldal), 2022



Molecular Machine: Biomimetic artificial motor

These nanoscale machines move in response to various stimuli such as light or heat. Applications may include drug delivery, sensors, and electronics.

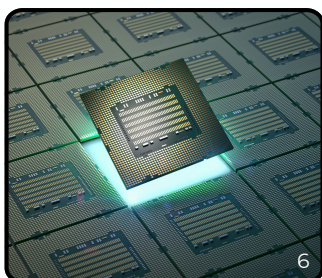
Jean-Pierre Sauvage, Sir Fraser Stoddart, and Ben Feringa, 2016



Graphene: One-atom thick sheet of carbon known as the “Wonder Material” due to its exceptional properties

Graphene is used in broad applications that leverages its mechanical, electrical, and optical properties such as touch screens and batteries.

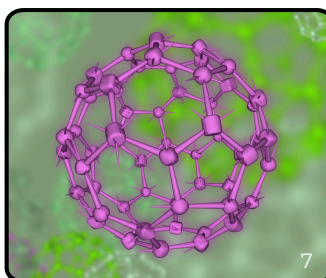
Konstantin Novoselov and Andre Geim, 2010



The Integrated Circuit (Microchip): Compact assembly of electronic circuits in single unit

This invention transformed our world by ushering in the digital era. These nanoscale chips make electronics smaller, faster, and cheaper.

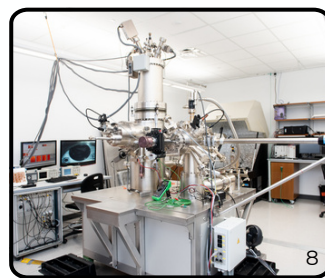
Jack Kilby (along with Zhores Alferov, and Herbert Kroemer), 2000



Buckminsterfullerene (“Buckyball”): Soccerball-shaped carbon molecule with unique properties

Buckyballs are used in optical sensors, specialty lubricants, and health and wellness applications.

Harold Kroto, Robert Curl, and Richard Smalley, 1996



Scanning Tunneling Microscope: Groundbreaking instrument that images individual atoms

This invention opened the door to nanotechnology by allowing scientists to “see” and manipulate matter at the atomic level.

Gerd Binnig and Heinrich Rohrer, 1986

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