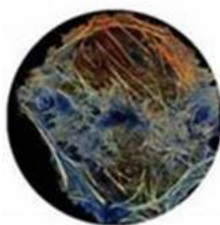


Unveiling the Mysteries: Join Our Mind-Blowing Expedition Into The Nanoworld!



abbelight
MRC Medical Research Council Imperial College London
Into the Nanoworld
28th May 2019 hr 11.00
LMS Seminar room, 2nd floor CWB



Breaking the resolution limit of conventional microscopy opened the way to investigation of cellular structures at the nanoscale, from individual proteins to entire organelles. Still nanoscopy is not that accessible as the entire imaging workflow requires multidisciplinary knowhow. abbelight accompanies researchers from the design of their projects to the final analyzed data.

We offer reagents and buffers for sample preparation; robust innovative instruments allowing 3D multicolour nanoscopy; user-friendly software to produce better reliable data; time, support and expertise throughout all the process.

In particular abbelight developed a new nanoscope allowing precise isotropic 3D localization precision (15X15X15nm) by decoupling the lateral and axial detection. For the latter, two different sources of axial information are retained: the supercritical angle fluorescence (SAF) that provides an absolute measurement allowing an extended axial depth (up to 5µm).

Furthermore SMLM is limited to a homogeneous field of view (FOV) of approximately 30X30µm due to illumination and/or detection constraints. abbelight developed a new excitation solution allowing to homogeneously illuminate the entire chip of sCMOS



Thus, nanoscopy can be accessible, to gain more details in 3D, in multicolor and to extract quantitative information in a high-throughput manner.

abbelight is here to help you speed up not only data acquisition but the full imaging workflow.



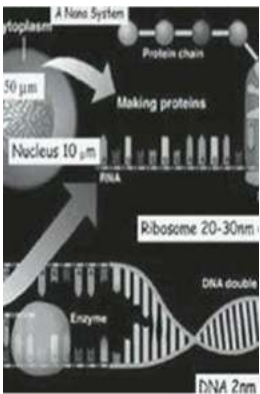
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The future of imaging, from microscopy to single-molecule localization.
For more info:
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Have you ever wondered what lies beyond our naked eye? Imagine a world where things are so small that they can only be seen through advanced scientific instruments. Welcome to the Nanoworld! In this extraordinary expedition, we will

journey into the realm of nanotechnology, uncovering groundbreaking discoveries and mind-boggling potentials. Get ready for an adventure of a lifetime!

What is Nanotechnology?

Nanotechnology is the science, engineering, and manipulation of materials at the nanoscale. It involves working with matter at dimensions as small as one billionth of a meter. At this scale, unique properties emerge, enabling scientists to design and create materials with incredible precision and control.



Expedition into the Nanoworld: An Exciting Voyage from Optical Microscopy to Nanoscopy

by Alberto Diaspro (Kindle Edition)

★★★★★ 5 out of 5

Language : English
File size : 39149 KB
Text-to-Speech : Enabled
Enhanced typesetting : Enabled
Word Wise : Enabled
Print length : 235 pages
Screen Reader : Supported



The Magic of Nanoscale

As we shrink down to the nanoscale, a whole new world unfolds before our eyes. Here, materials behave differently, and their characteristics can change dramatically. For instance, the color, strength, and conductivity of a substance can vary when it is reduced to nanoscale dimensions. This opens up endless possibilities for developing innovative technologies and revolutionizing various fields.

Real-World Applications of Nanotechnology

Nanotechnology has already found its way into our everyday lives, although we may not realize it. Some of the key areas where nanotech has had a profound impact include:

1. Medicine

Doctors and researchers are utilizing nanotechnology to develop targeted drug delivery systems, precise cancer treatments, and advanced medical imaging techniques. Nanoparticles can be equipped with drugs and precisely guided to specific areas in the body, reducing side effects and improving efficiency.

2. Electronics

With shrinking electronic devices, nanotechnology is crucial for further miniaturization and enhancing performance. Nanoscale transistors, quantum dots, and nanowires are just a few examples of how nanotech is revolutionizing the world of electronics.

3. Energy

Efficient and sustainable energy solutions are essential for the future.

Nanotechnology has brought us energy-saving materials, enhanced solar panels, and more efficient batteries. By harnessing the properties of nanomaterials, we can pave the way for a greener world.

4. Environment

Nanotechnology is playing a vital role in addressing environmental challenges. From water purification to pollution control, nanomaterials are being used to develop efficient and eco-friendly solutions. Nanotech offers opportunities to

clean up contaminated sites, reduce emissions, and improve air and water quality.

Exploring the Nanoworld

Now that you understand the incredible potential of nanotechnology, let's embark on an exciting journey into the Nanoworld. Buckle up as we explore some mind-blowing discoveries:

1. Carbon Nanotubes

Carbon nanotubes are incredibly strong and have remarkable electrical conductivity. These tiny cylindrical structures hold immense promise for applications in electronics, aerospace, and even medicine. Scientists are exploring their use as super-strong materials, ultra-sensitive sensors, and as reinforcements for enhancing the properties of other materials.

2. Nanorobots

Imagine tiny robots navigating through your bloodstream, searching for diseases, and delivering medications precisely. Nanorobots, driven by advancements in nanotechnology, have the potential to revolutionize healthcare. Through sophisticated engineering, researchers are developing nanorobots that can perform targeted drug delivery, tissue repair, and even diagnose diseases at an early stage.

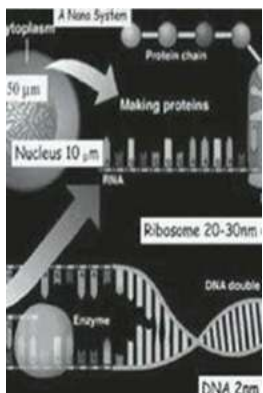
3. Self-Healing Materials

Nature has inspired us to develop materials that can heal themselves when damaged. Nanotechnology enables the creation of self-healing materials by embedding tiny capsules filled with healing agents in the material structure. These capsules rupture when the material is damaged, releasing the healing agent and restoring the integrity of the material.

4. DNA Origami

Yes, you read it right! Scientists can now fold DNA strands into various shapes and configurations, just like origami. By precisely designing the DNA sequence, researchers have created nanoscale structures with endless possibilities. DNA origami holds potential in areas such as drug delivery, nanoelectronics, and even building nanoscale machines.

The Nanoworld is a realm of marvels and endless opportunities. Nanotechnology is transforming the way we live, bringing innovative solutions to complex challenges. Embarking on this expedition into the Nanoworld has only scratched the surface of what lies ahead. So, are you ready to join us on this mind-blowing journey? Get ready to witness the incredible feats of nanotechnology!



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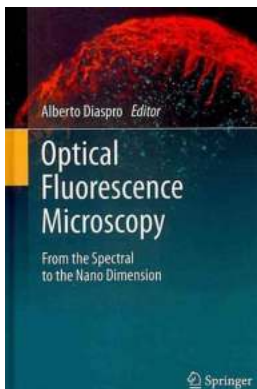


The story of microscopy over the years is one of wonder, revelation, and even love. What better words could there be to describe the amazing things that we have been able to see, learn and accomplish thanks to the progress made in this

field? A love story between a piece of glass and the rainbow with an original soundtrack mad of poetry and music.

From Galilei's initial foray into basic optical microscopy, including the Camillo Golgi and Giuliano Toraldo di Francia lessons, to such later developments as time-resolved microscopy, multi-photon microscopy and three-dimensional microscopy to innovations such as optical nanoscopy, bioimaging and super resolution imaging, the book seeks to take the reader, be they scientist or layperson, on a journey through the evolution of the microscope and its many uses, including in the field of medicine.

The author uses visible light as a through-line to unite the various chapters, as well as using fluorescence as a touchpoint from which to map the changes in the science, a significant choice, as it, along with label-free approaches and the addition of artificial intelligence, form the natural environment for development of the modern multi-messenger microscope towards bioimaging at the nanoscale.



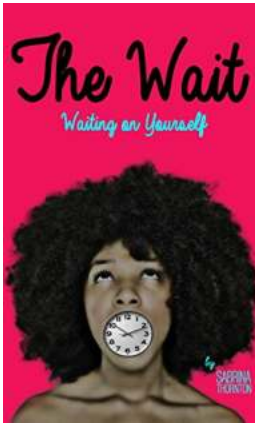
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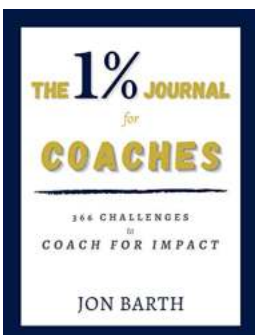
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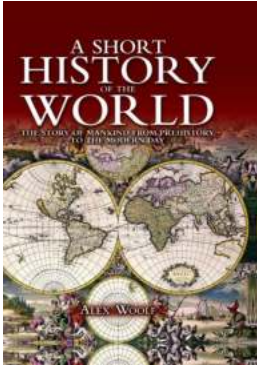
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