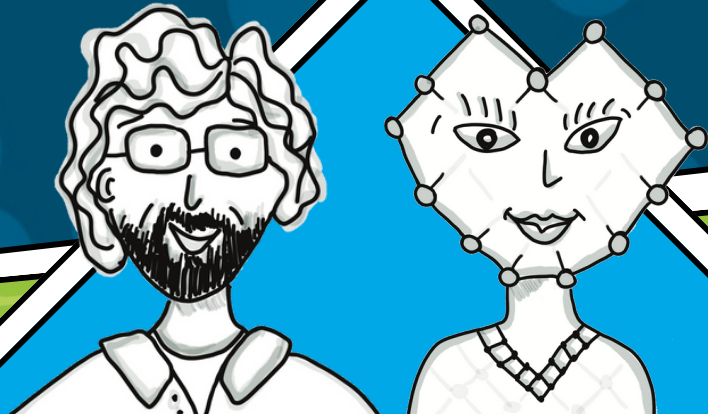


Nano the MOF  
& Professor Theodore  
save the planet!

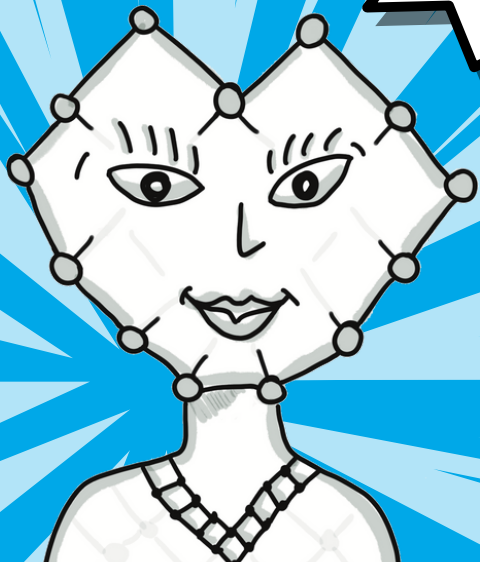




PROFESSOR  
THEODORE



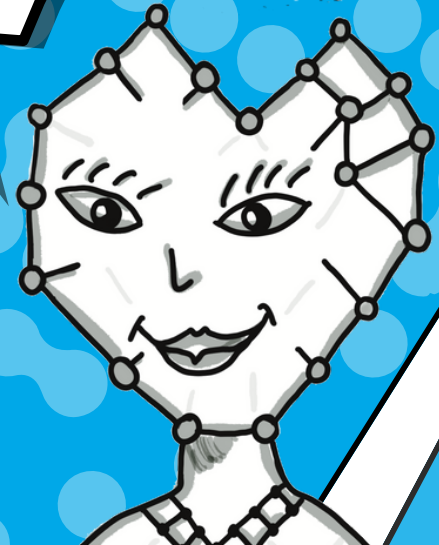
NANO THE  
MOF



Hi, I AM NANO  
THE MOF

I AM VERY SMALL  
AND I HAVE A  
SUPER-POWER!

WITH PROFESSOR  
THEODORE,  
I CAN SAVE THE  
PLANET!



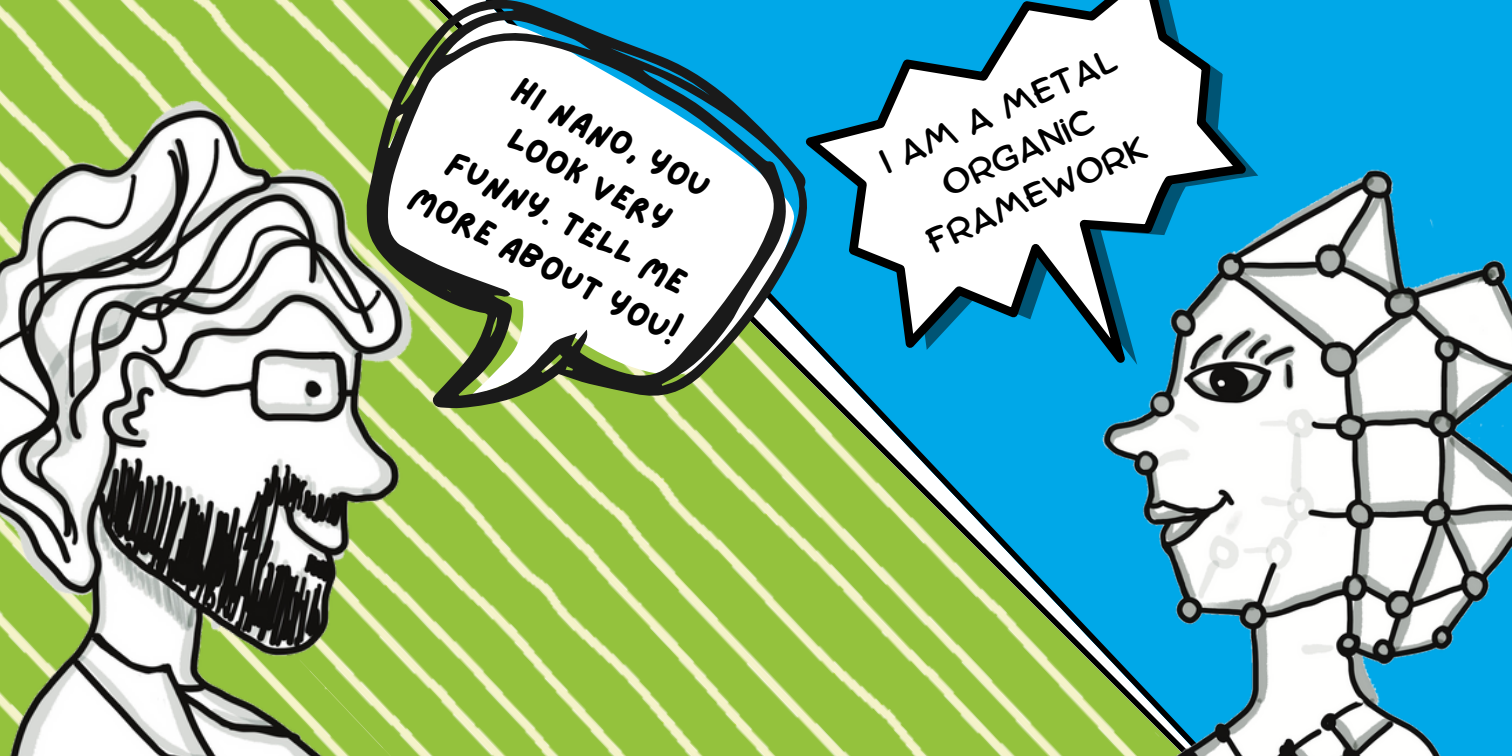
DO YOU WANT TO  
DISCOVER HOW?





# EPISODE 1

The super-power of  
Nano the MOF



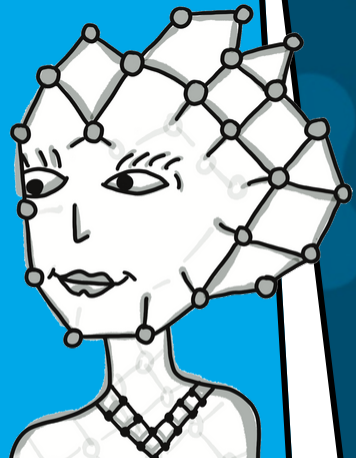
HI NANO, YOU  
LOOK VERY  
FUNNY. TELL ME  
MORE ABOUT YOU!

I AM A METAL  
ORGANIC  
FRAMEWORK



THIS IS INTERESTING! CAN YOU EXPLAIN?

THIS MEANS THAT I'M MADE OF SMALL METAL SCOOPS HELD TOGETHER BY LITTLE STICKS.



## LEARN MORE

Metal Organic Frameworks (we will call them MOFs) are solid materials, made of metallic ions (which are acting as connectors) and of organic material (which are acting as linkers between the connectors).

Organic material is made of the same molecules than living organisms (plant, animals). This means mainly carbon, oxygen and hydrogen.

# LEARN MORE

In MOFs, the geometrical structure between the metallic ions and the organic linkers creates high porosity.

This means there are empty spaces, named pores, within the MOFs. You can imagine something porous as full of tiny holes.

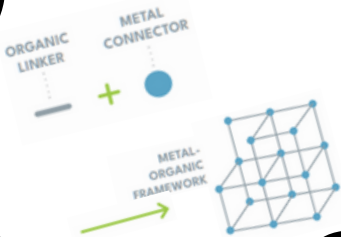
A character with a head made of a white metal-organic framework (MOF) structure, featuring a grid of interconnected nodes and lines. The character has a human-like face with eyes, a nose, and a smiling mouth. The character is wearing a white shirt with a grid pattern.

WHY ARE YOU SO SPECIAL?

I AM SUPER POROUS!



# LEARN MORE



POROUS?

MY SKELETON IS MADE OF SCOOPS AND STICKS, IS FULL OF TINY EMPTY HOLES!

THIS MAKES ME VERY LIGHT

A cartoon illustration of a man with glasses and a beard, looking towards the right. He is positioned on the left side of the image against a green background.

YOUR TINY HOLES ARE  
HUNDRED THOUSAND TIMES  
SMALLER THAN THE WIDTH OF  
A HAIR! AMAZING!

A cartoon illustration of a woman whose face is composed of a molecular structure of grey spheres connected by lines. She is smiling and looking towards the left. She is positioned on the right side of the image against a blue background.

THIS MAKES ME A  
NANO POROUS  
MATERIAL.

## LEARN MORE

A nanometer is one millionth of a millimeter! Nanomaterials are less than 100 nanometers wide. Things this small act in some really special ways. They have all kinds of uses, for example in electronics or medicine.

# LEARN MORE

Adsorption is the sticking of gas, liquid or solid particles to a surface. The force holding these particles on the surface may be physical or chemical.

Something porous can retain particles in its pores by adsorption and release these particles later.



I CAN ADSORB THINGS!

I CAN CATCH AND STICK A LOT OF THINGS IN ME, IT'S LIKE BEING A SUPER SPONGE.



WHAT IS YOUR SUPER-POWER?

# LEARN MORE

Hydrogen is the simplest and the most abundant chemical element in the universe.

It can be used to produce electricity and to power vehicles. And this, without CO<sub>2</sub> emissions.

Because hydrogen is very light, it is very difficult to store. MOFs can store hydrogen in their pores by adsorption.



WHAT CAN YOU DO  
WITH YOUR  
ADSORPTION POWER?

I CAN REMOVE POLLUTANTS FROM THE AIR OR FROM WATER!

I CAN ALSO STORE A LOT OF ENERGY BY ADSORBING GREEN HYDROGEN.

I CAN CARRY MEDICINES TO THE EXACT SPOT INSIDE OUR BODIES WHERE THEY ARE NEEDED.



**THE END**



# **THANK YOU**

Nano the MOF and Professor Theodore got a lot of money from the European Union for helping to save the planet.  
They say: "Thank you!"



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# SOURCES

For writing the "Learn more" sections, the authors used vocabulary.com, kids.kiddle.co, academickids.com and similar sources