

Carbon-based, layered composites for energy storage and environmental applications

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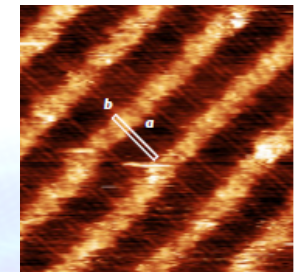
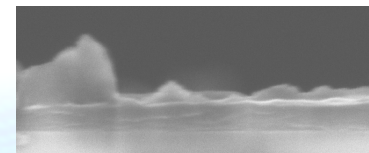
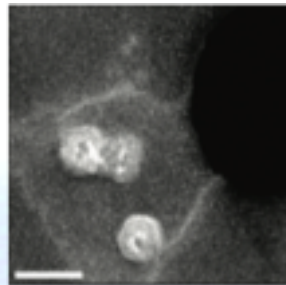
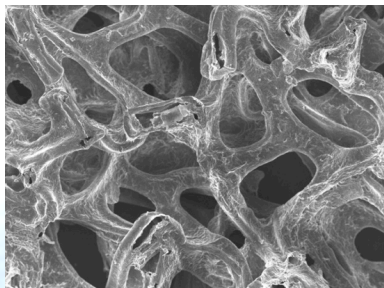
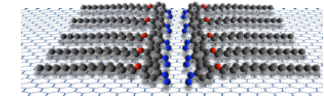
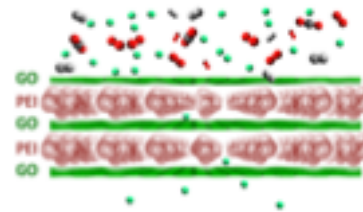
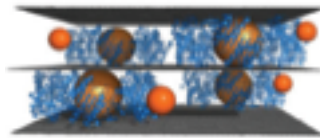
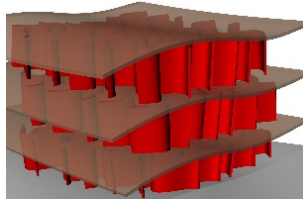
GRAPHENE
FLAGSHIP



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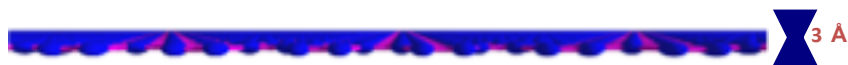
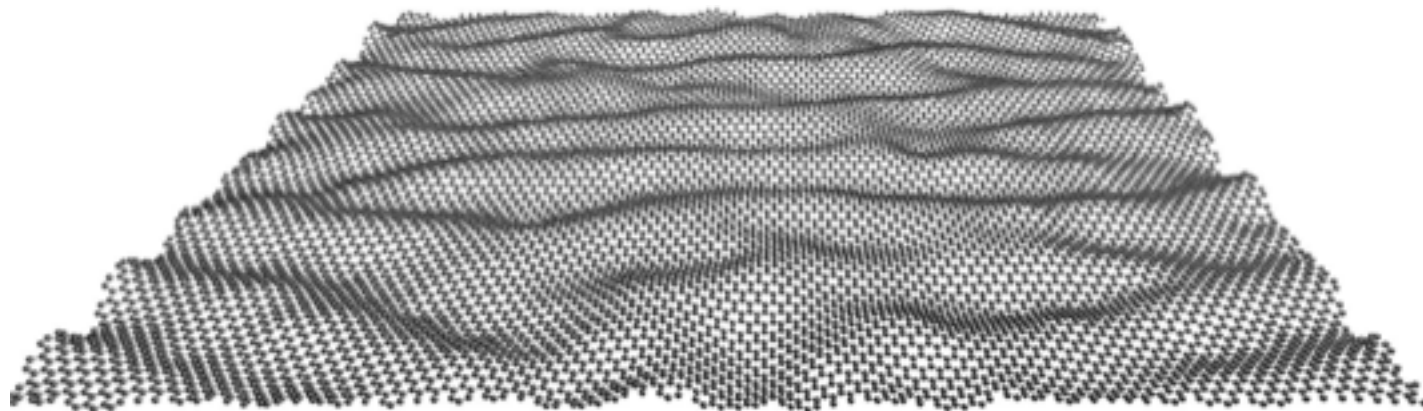


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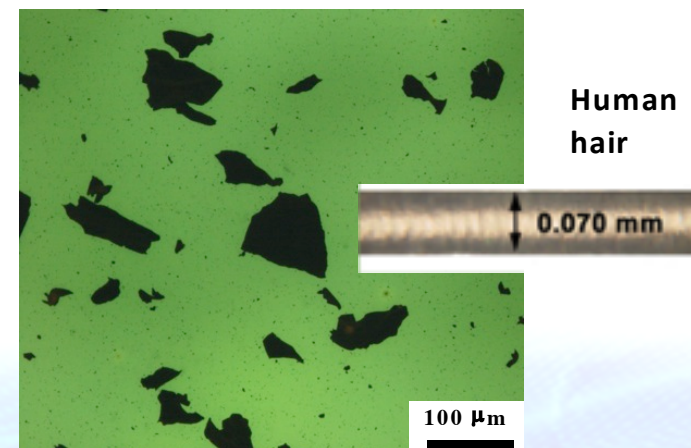
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2-DIMENSIONAL NANOSHEETS AS NOVEL BUILDING BLOCKS



It is both mono-atomic...

...and mesoscopic



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MONOATOMIC NANOSHEETS

GRAPHENE OXIDE

Water-soluble

High aspect ratio ($>10^5$)

All monolayers

Tunable conductivity

Easy chemical

functionalization



10 μm



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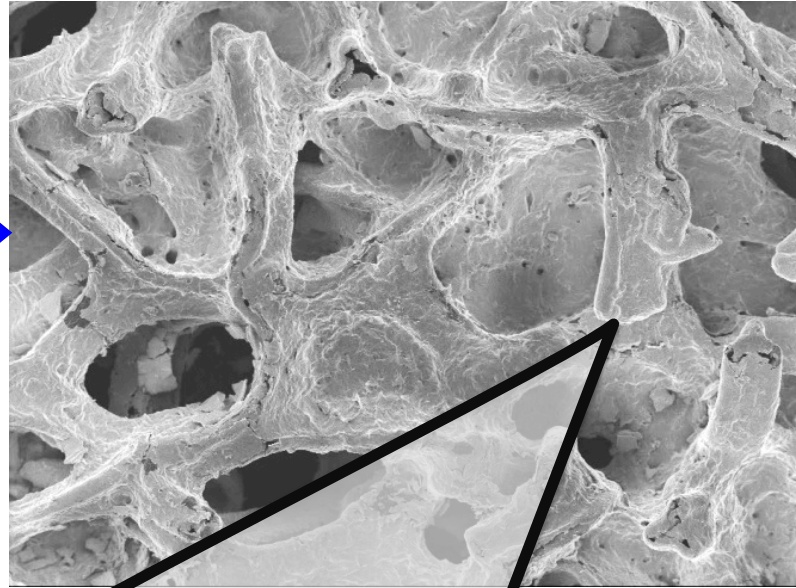
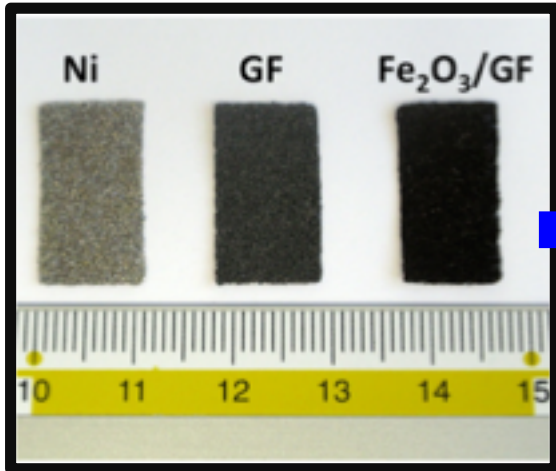


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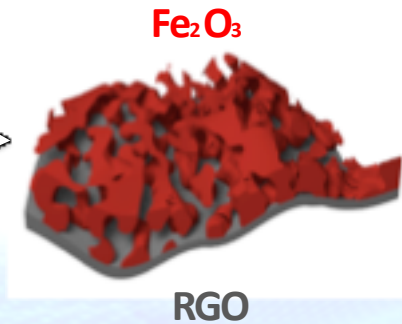
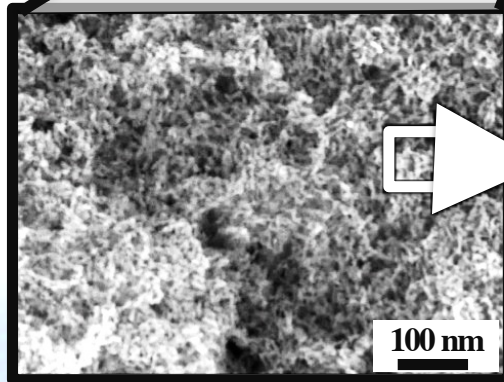


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FROM 2D MATERIALS TO 3D STRUCTURES



COIN CELL



Carbon 84 (2015) 254

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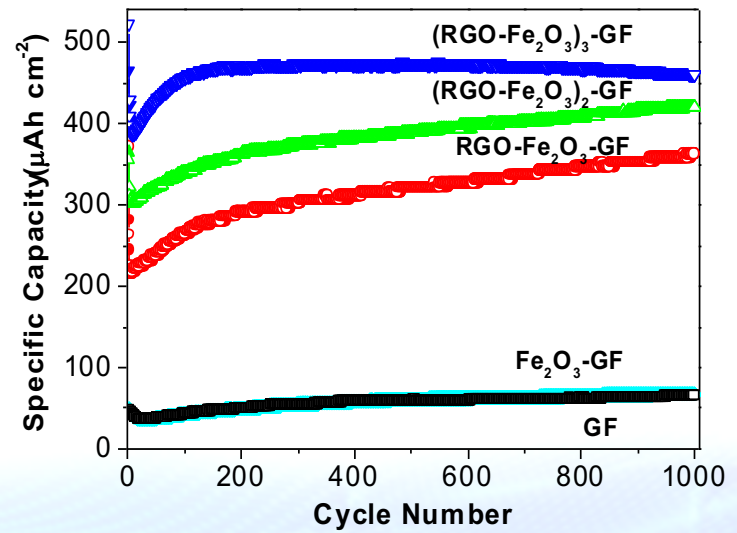
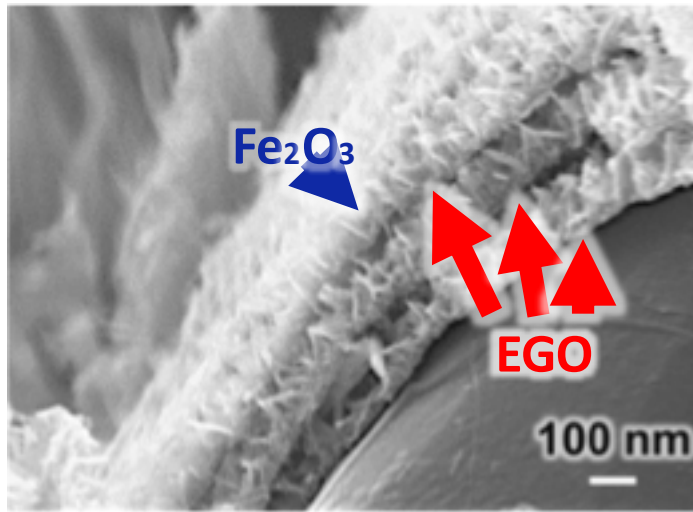
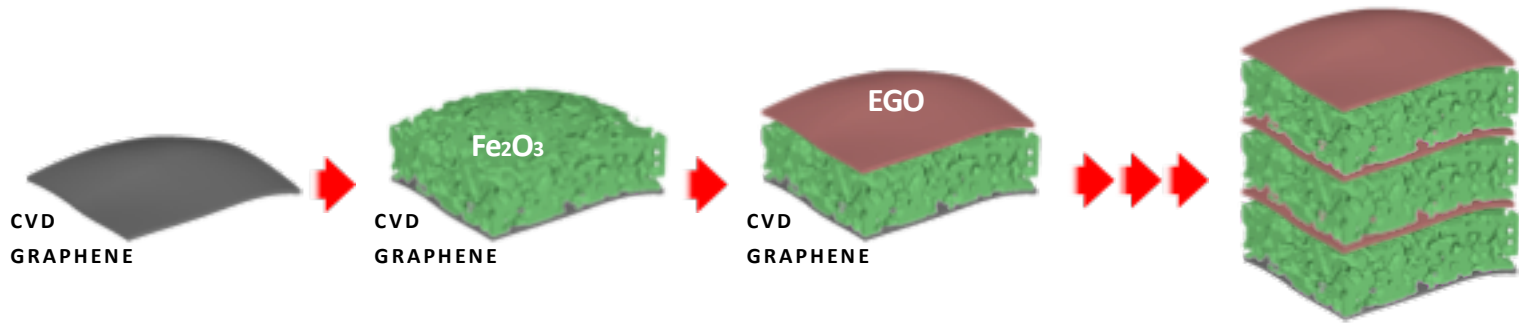


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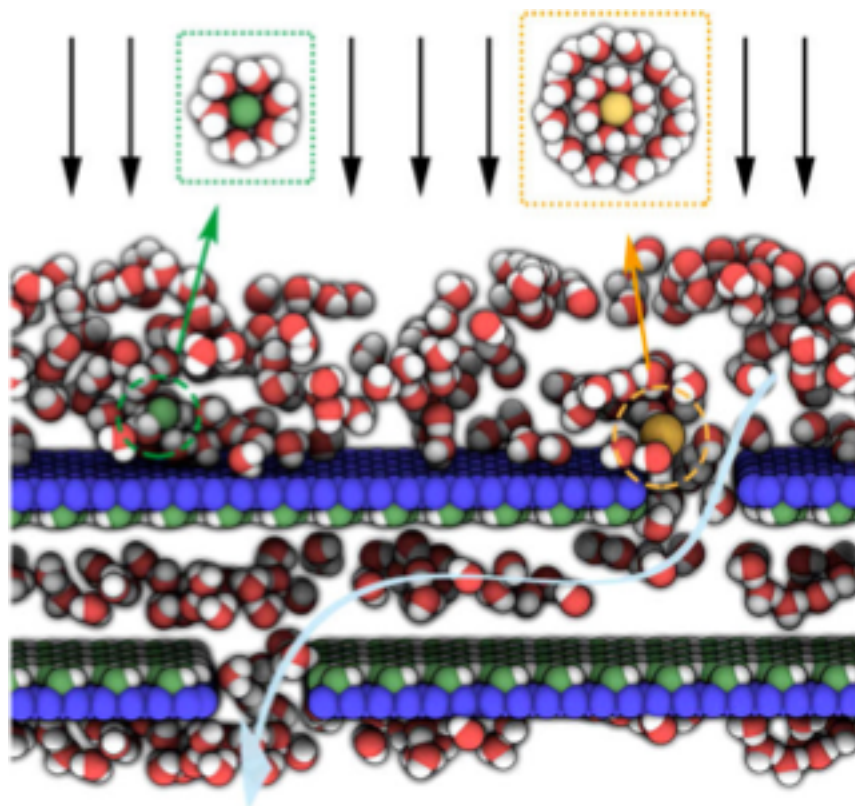


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INCREASING COMPLEXITY



GAS TRANSPORT IN 2D MATERIALS



Chen et al. ACS Appl. Mater. Interfaces 2017, 9, 22826

GAS CAPTURE-PURIFICATION



WATER PURIFICATION



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GRAPHENE
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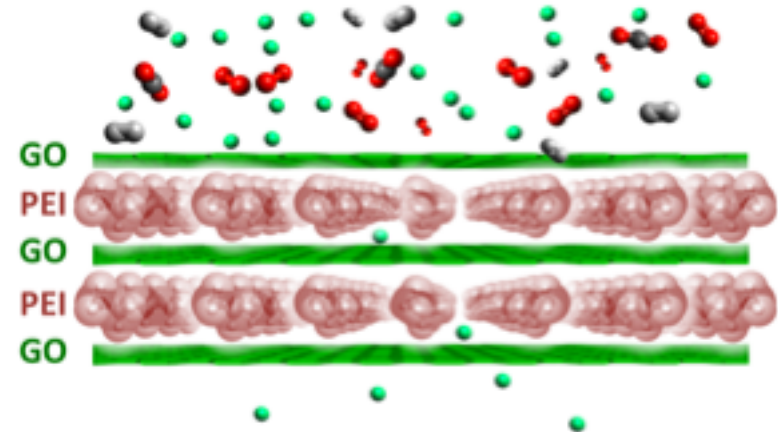
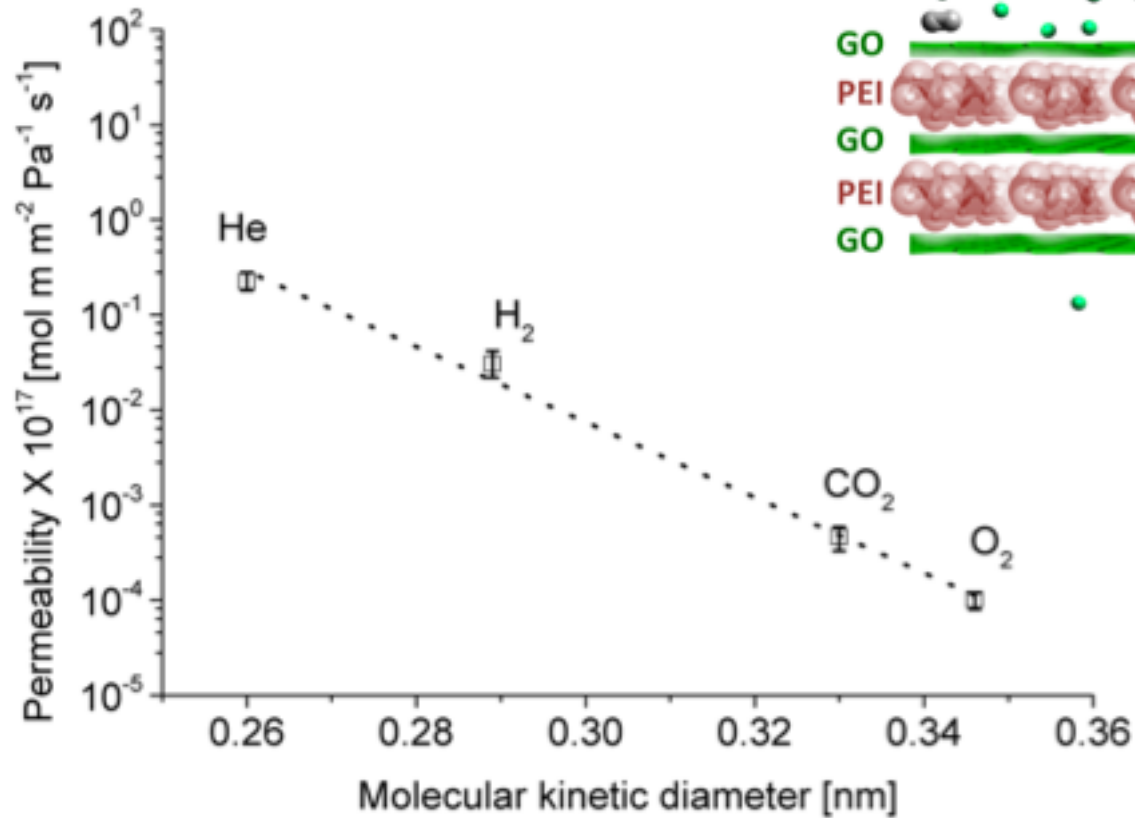


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SELECTIVE GAS PERMEATION IN GRAPHENE OXIDE-POLYMER MULTILAYERS



Acs Applied Materials & Interfaces, 10, 11242, 2018

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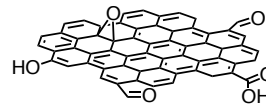


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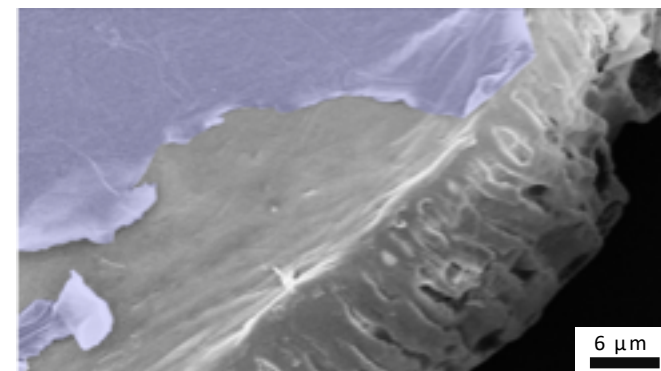
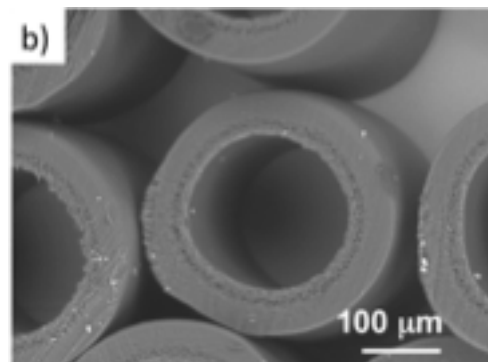
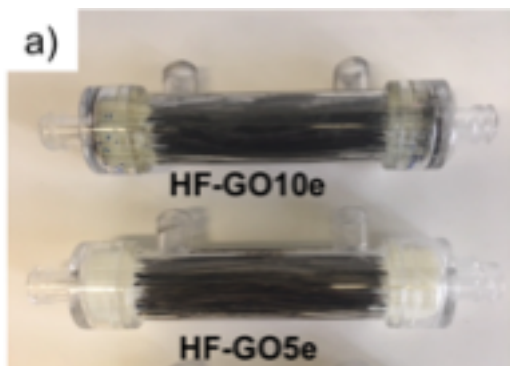
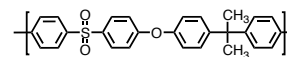


GRAPHENE OXIDE-POLYMER FILTERS FOR WATER PURIFICATION

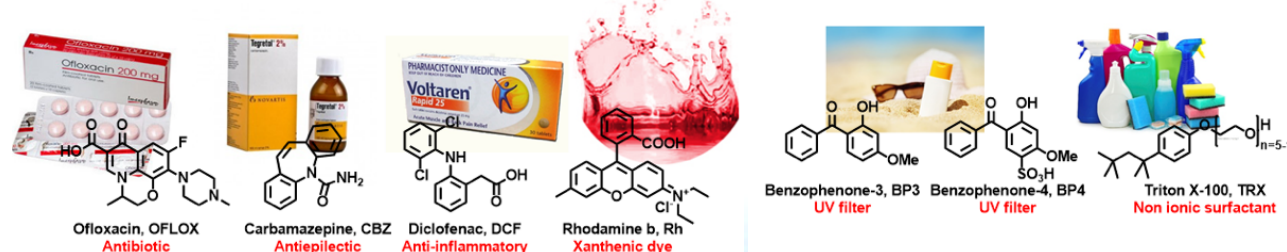
GRAPHENE OXIDE



POLYSULFONE



EMERGING ORGANIC CONTAMINANTS



Patent pending IT 102016000016996,
EP17156792.8

Adv. Sustainable Syst. 2017, 1700019
Chem. Eng. J. 2017, 326, 130

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FLAGSHIP

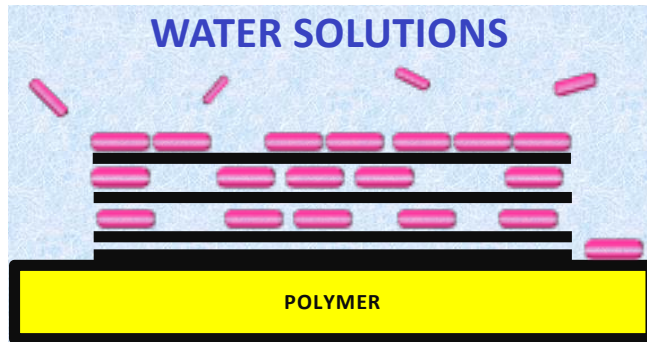
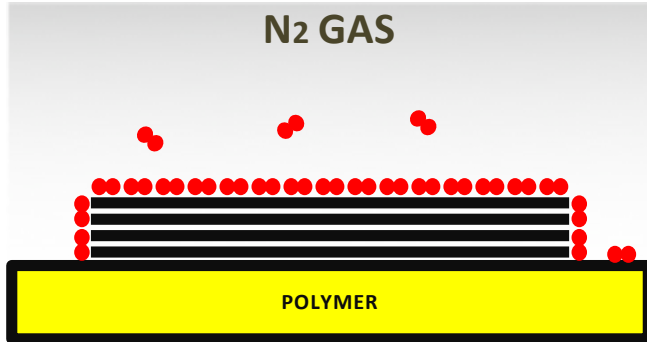


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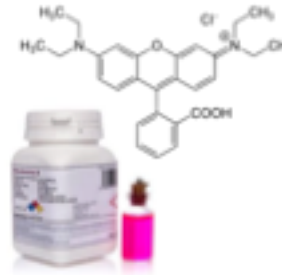


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INTERCALATION OF MOLECULES IN 2D MATERIALS



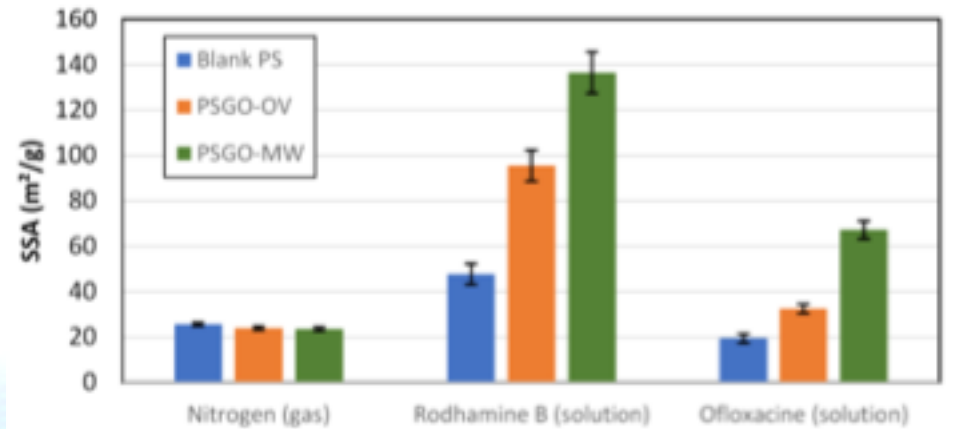
a) RHODAMINE B



b) OFLOXACIN



Area available to molecular adsorption



Nanoscale, 2019, 11, 22780

ONE MATERIAL, MANY APPLICATIONS

WATER FILTERS



MEDICA

AUTOMOTIVE



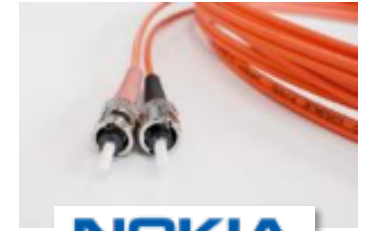
CRF
CENTRO RICERCHE
FIAT

ELECTRIC SWITCHES



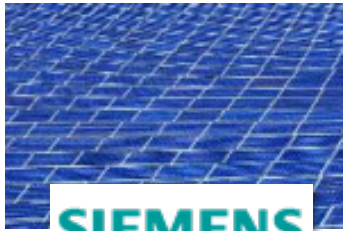
ABB

OPTICAL COMMUNICATION



NOKIA

SOLAR PANELS



SIEMENS

AIR FILTERS



 **Lufthansa**

IR CAMERAS



EMBERION

AUTO VISION



ICFO

BATTERIES



AERONAUTICS



AIRBUS

SAFETY - REGULATION



TEMAS
Empowered to act
Respected to achieve

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GRAPHENE
FLAGSHIP

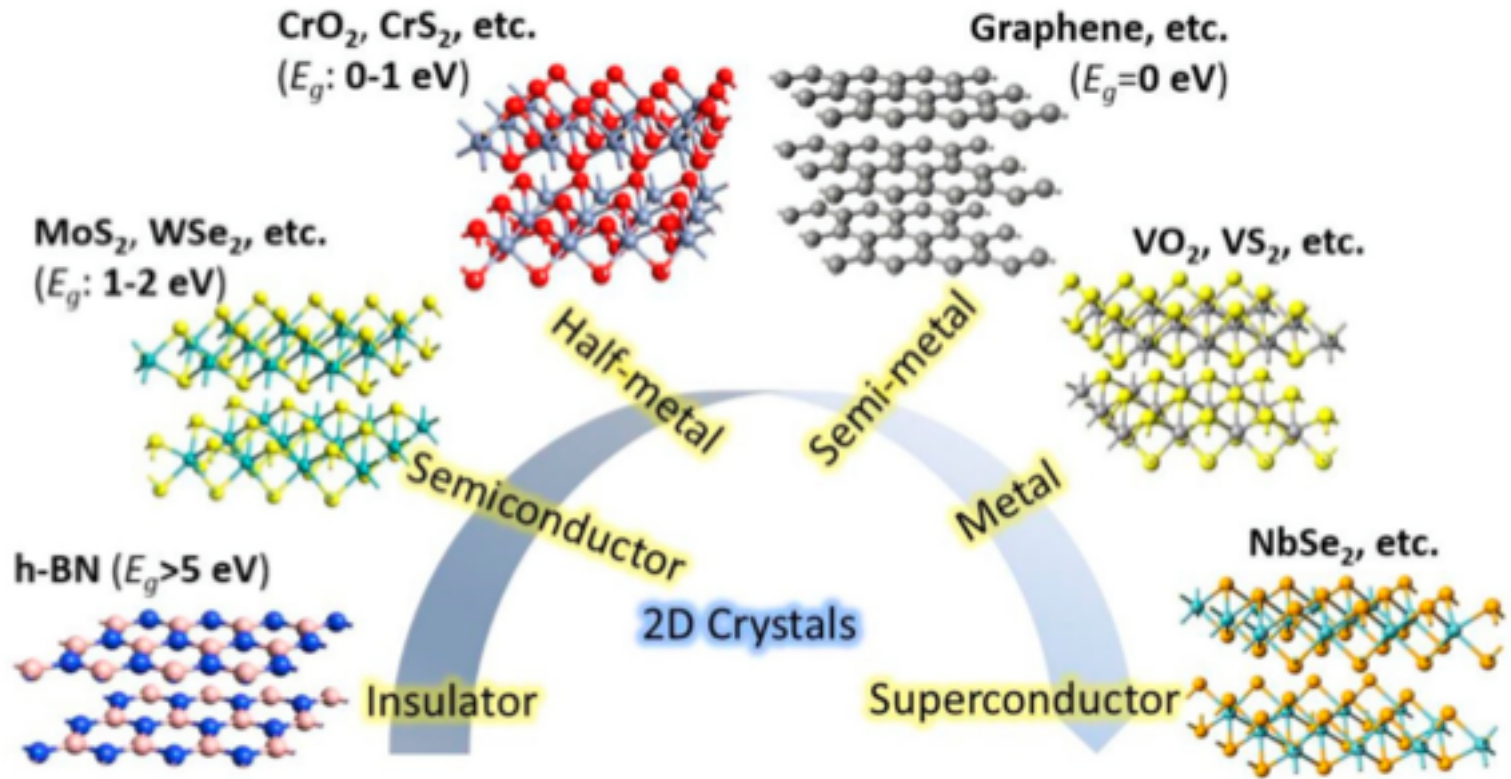


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THE FAMILY OF 2D MATERIALS (STILL GROWING)



Coatings 2019, 9, 133

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GRAPHENE
FLAGSHIP



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CONFERENCE ANNOUNCEMENT



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chem2Dmat 

3rd EUROPEAN CONFERENCE
ON THE CHEMISTRY
OF TWO-DIMENSIONAL MATERIALS

BOLOGNA, SEPTEMBER 2021

STAY TUNED...

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