

Predicting Biomolecule Adsorption on Nanomaterials: A Hybrid Framework of Molecular Simulations and Machine Learning

Ewelina Wyrzykowska,^{*a} Mateusz Balicki,^a Iwona Anusiewicz,^{a,b} Ian Rouse,^c Vladimir Lobaskin,^c Piotr Skurski,^{a,b} Tomasz Puzyn^{*a,b}

^aQSAR Lab Ltd, Trzy Lipy 3, 80-172 Gdansk, Poland

^bLaboratory of Environmental Chemoinformatics, Faculty of Chemistry, University of Gdansk, Wita Stwosza 63, 80-308 Gdansk, Poland

^cSchool of Physics, University College Dublin, Belfield, Dublin, Ireland

Supplementary materials

1. Structural representation of nanomaterials (NMs) used in meta-modeling:

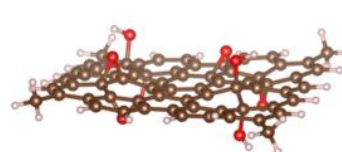
A. Carbon-based NMs



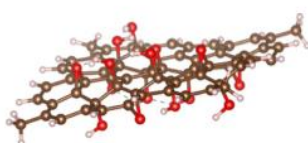
C-amorf



Graphene



Reduced-graphene-oxide



Graphene-oxide



CNT-15



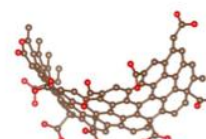
CNT-COO(-)-low



CNT-NH3(+)-low



CNT-COOH-low



CNT-COO(-)-high



CNT-NH2-low



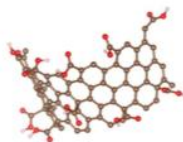
CNT-NH2-high



CNT-OH-low



CNT-OH-high



CNT-COOH-high

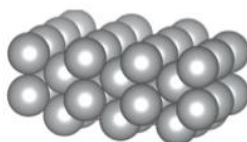


CNT-NH3(+)-high

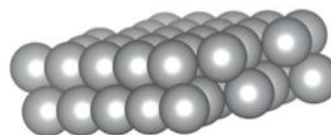
B. Metals NMs



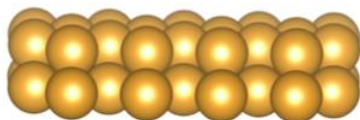
Ag100



Ag110

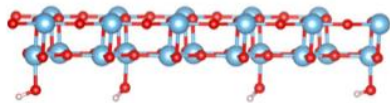


Ag111

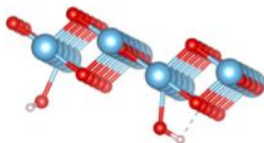


Au100

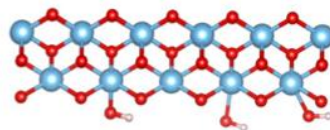
C. Metal oxides NMs



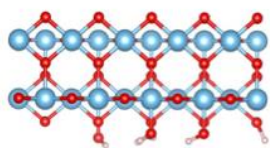
Anatase-OH-100



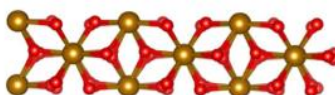
Anatase-OH-101



Rutile-OH-100

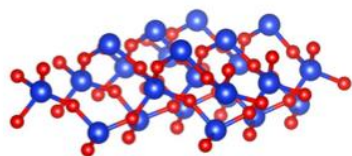


Rutile-OH-110

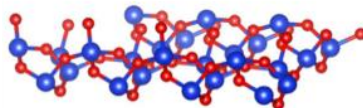


Fe₂O₃

D. Metalloid oxide NMs

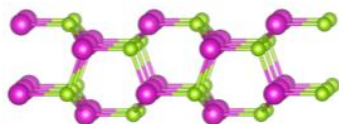


SiO₂-amorph



SiO₂-quartz

E. Cedmium selenide NMs



CdSe-2m10