Novel photocatalytic materials for industrial wastewater treatment under UV and Visible light irradiation

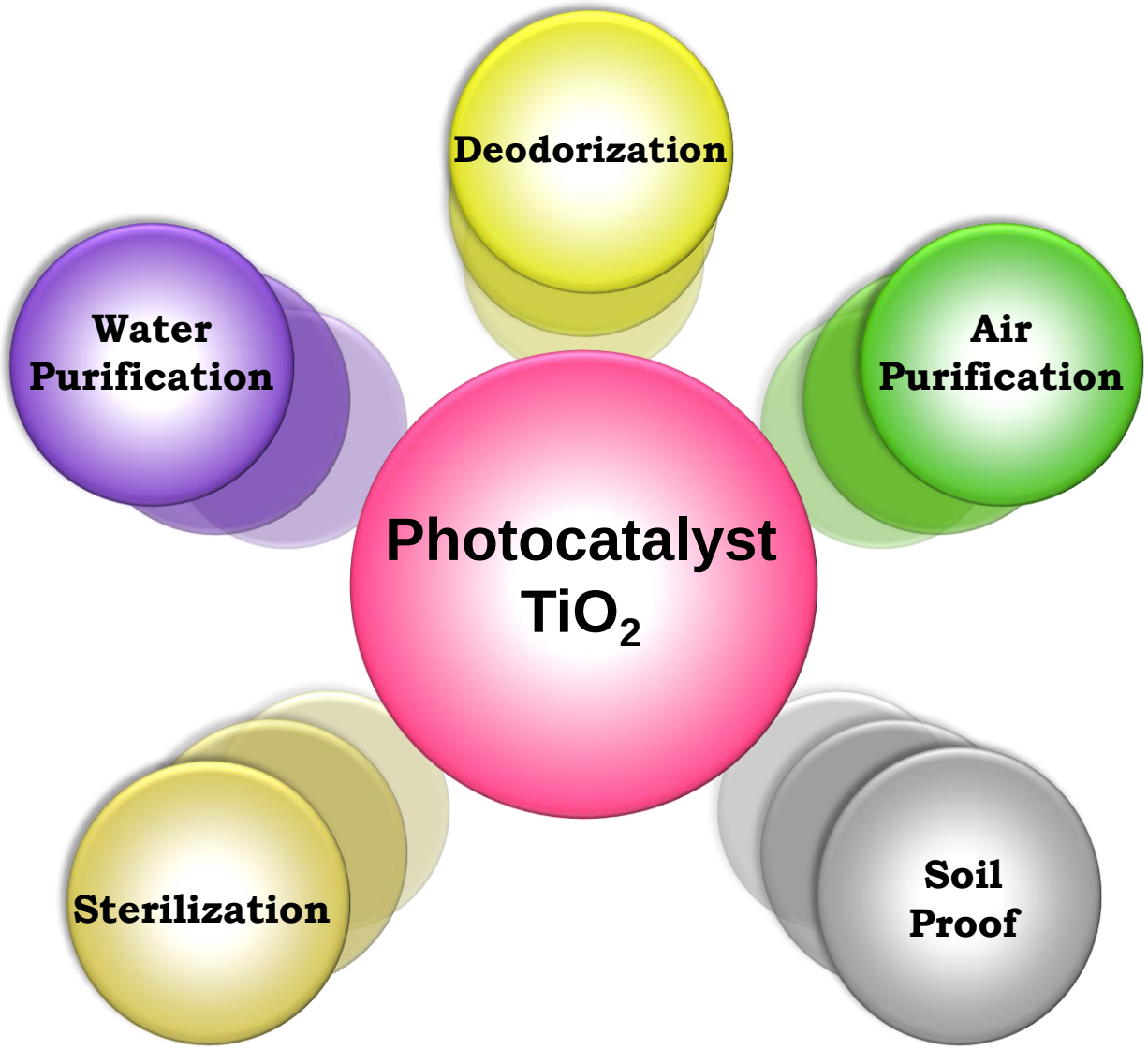
Dimitrios S. Tsoukleris, P. Schinas, E. A. Pavlatou

National Technical University of Athens (NTUA)

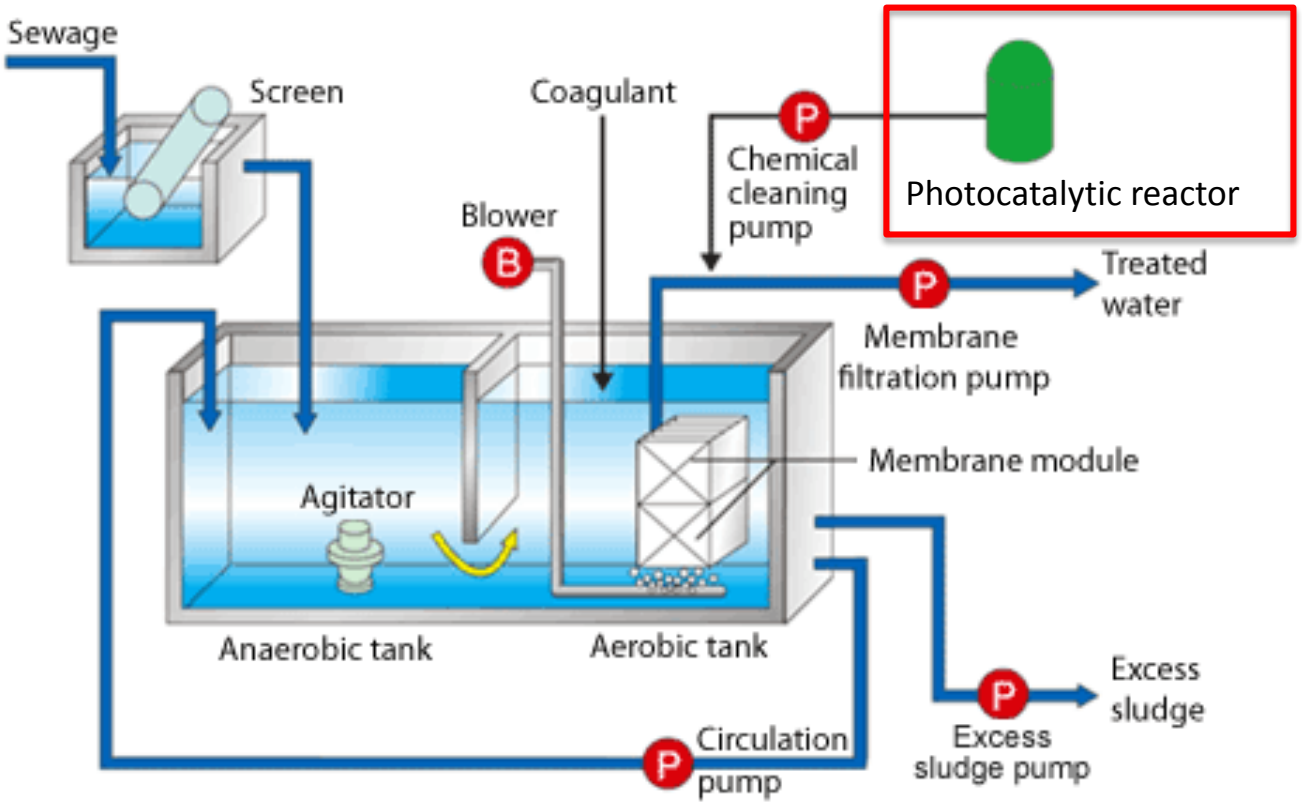
Our Target

- Preparation of new photocatalytic materials
- Environmental Friendly
- Use of low cost materials
- Use of visible light irradiation
- Up-scale process

Photocatalytic TiO_2 Applications

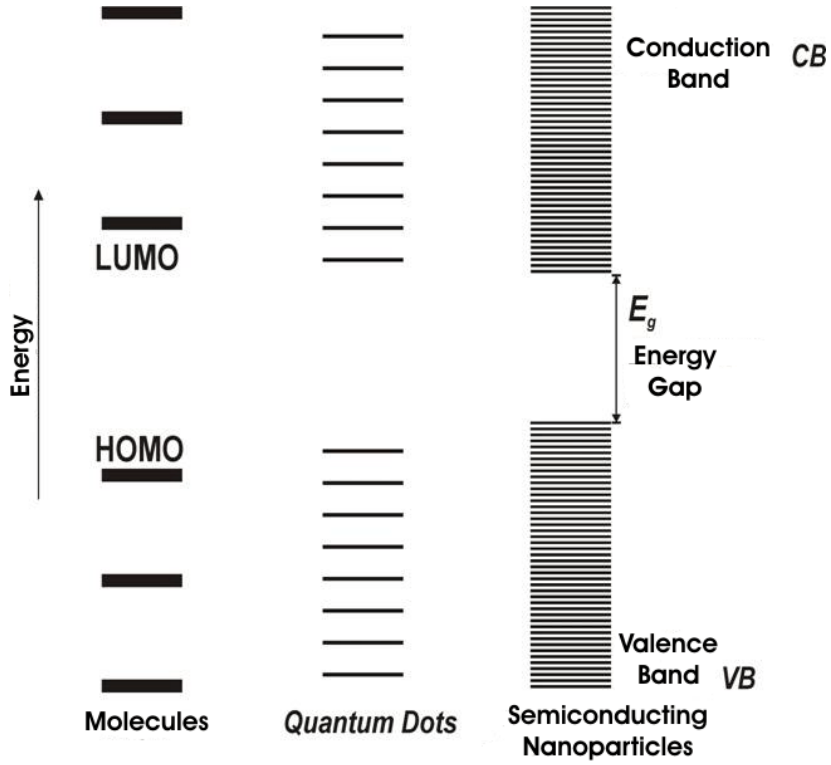


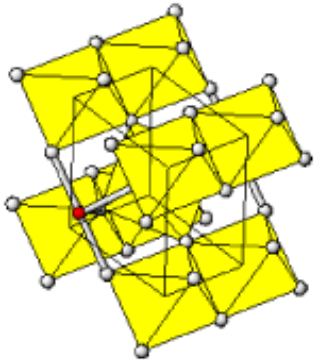
Submerged Membrane Bioreactor (SMBR or MMR)

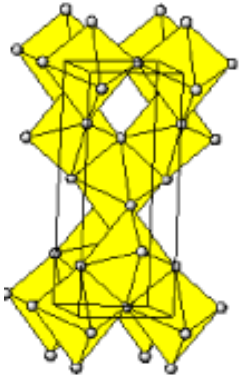


TiO_2 Characteristics

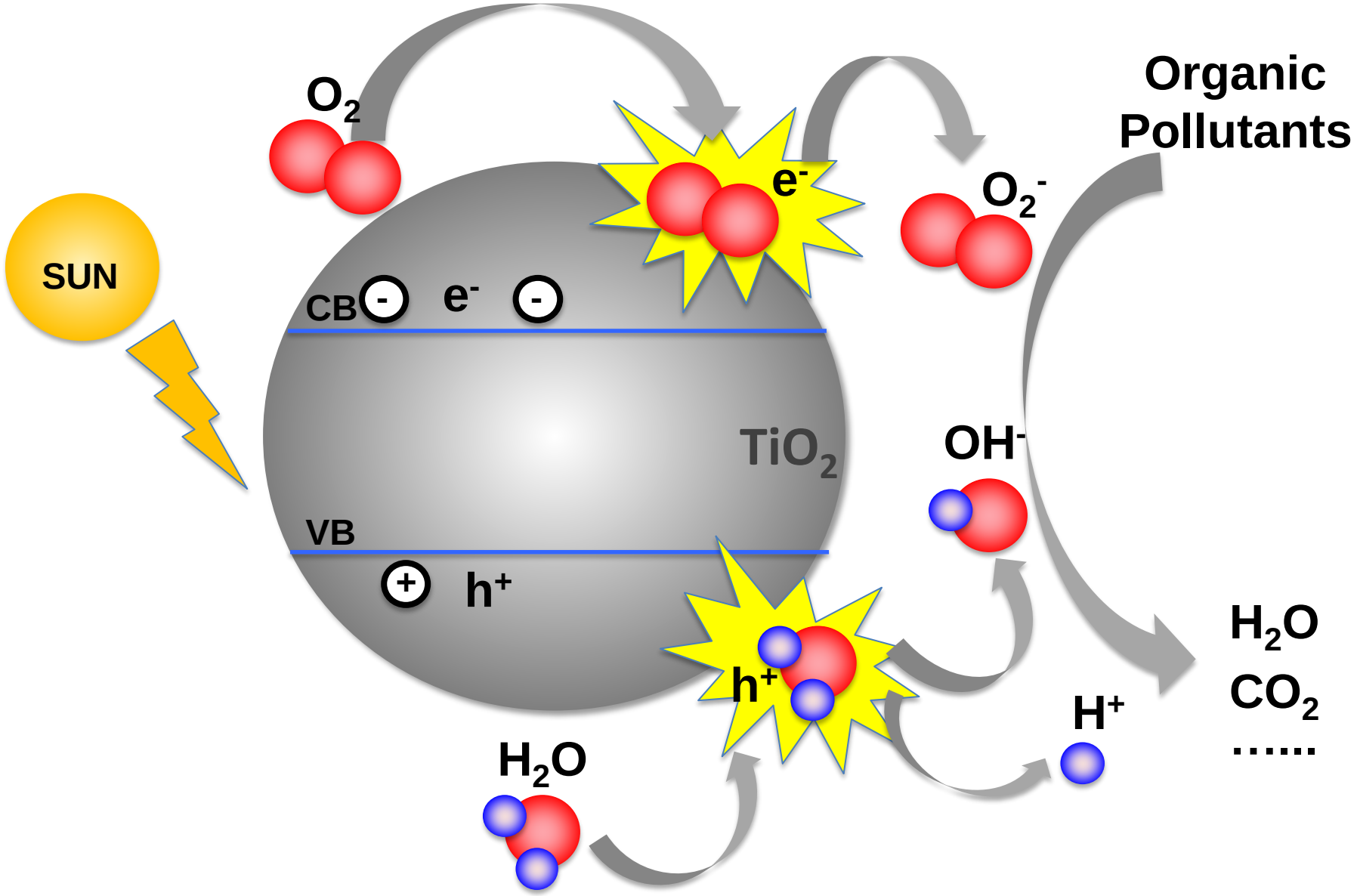
1. White powder, chemical innert
2. No toxic material, harmless for man & animals
3. Material with low cost per mass unit because of its massive production
4. n- type semiconductor
5. Nanoparticles with 1-100 nm size
6. Band gap 3,0-3,2 eV
7. Most stable, abundant crystalline phases rutile and anatase



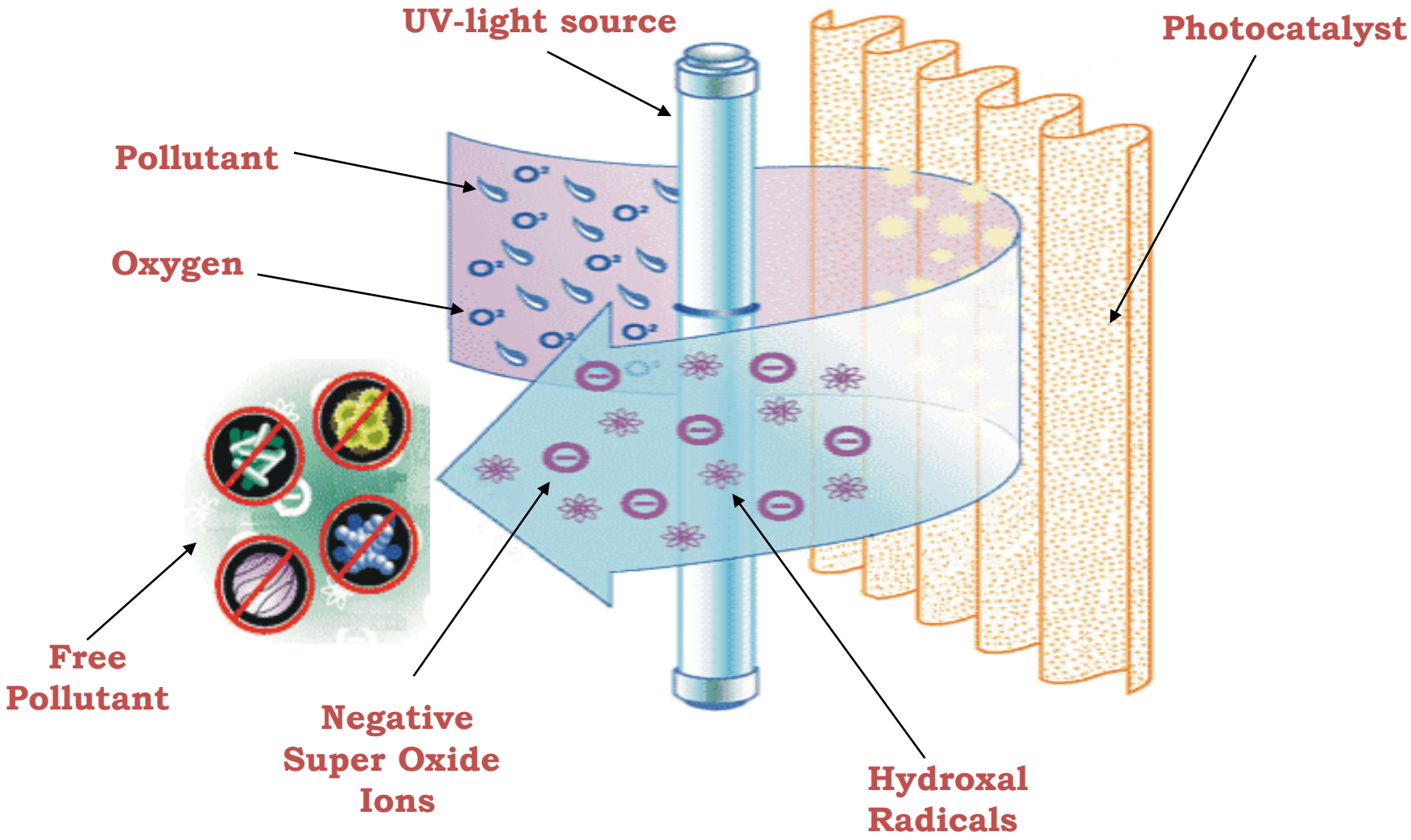




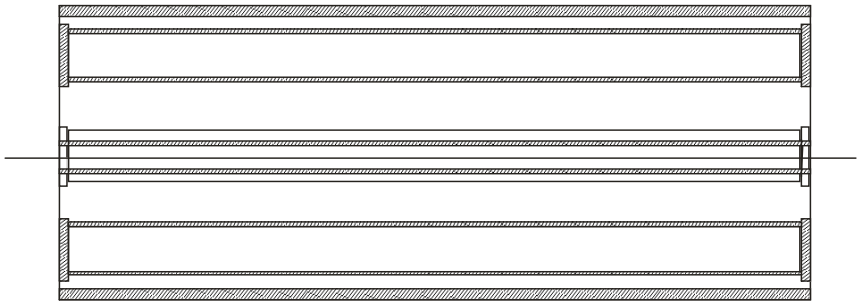
Photocatalytic Action Of TiO_2

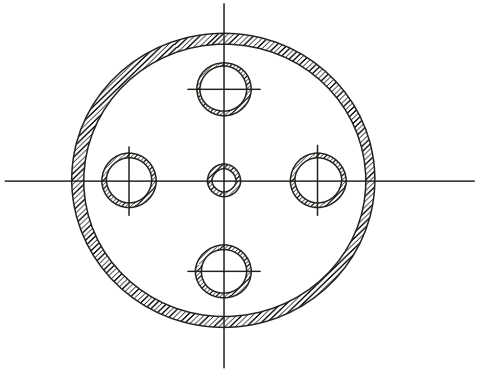


TiO_2 Photocatalysis

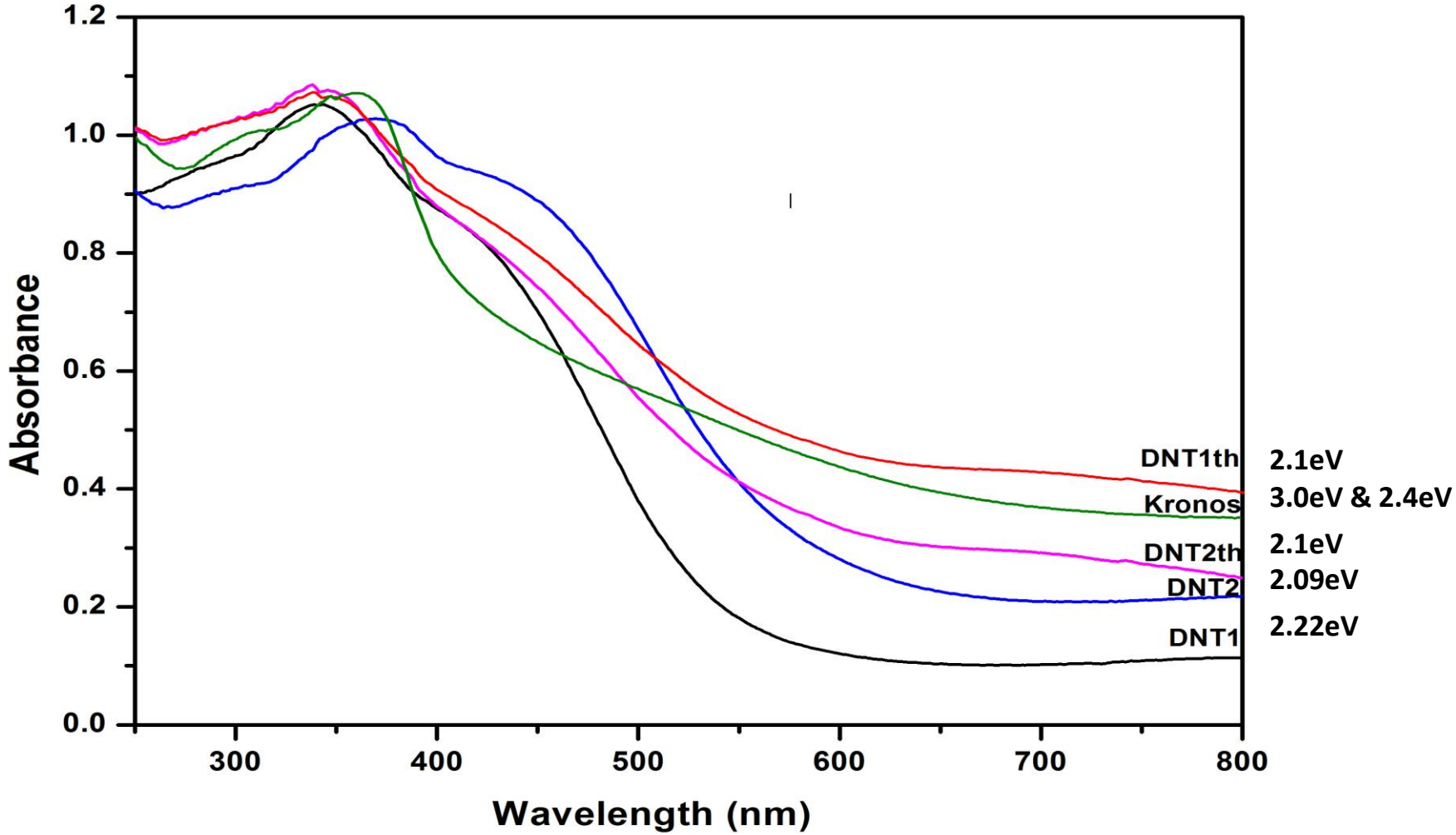


Packed Bed Photoreactor for liquid pollutants

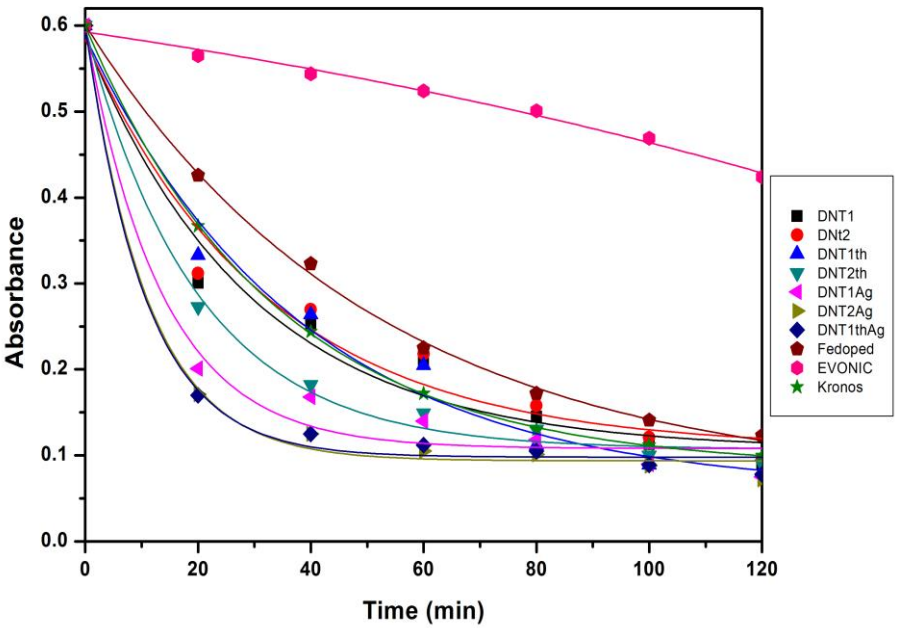




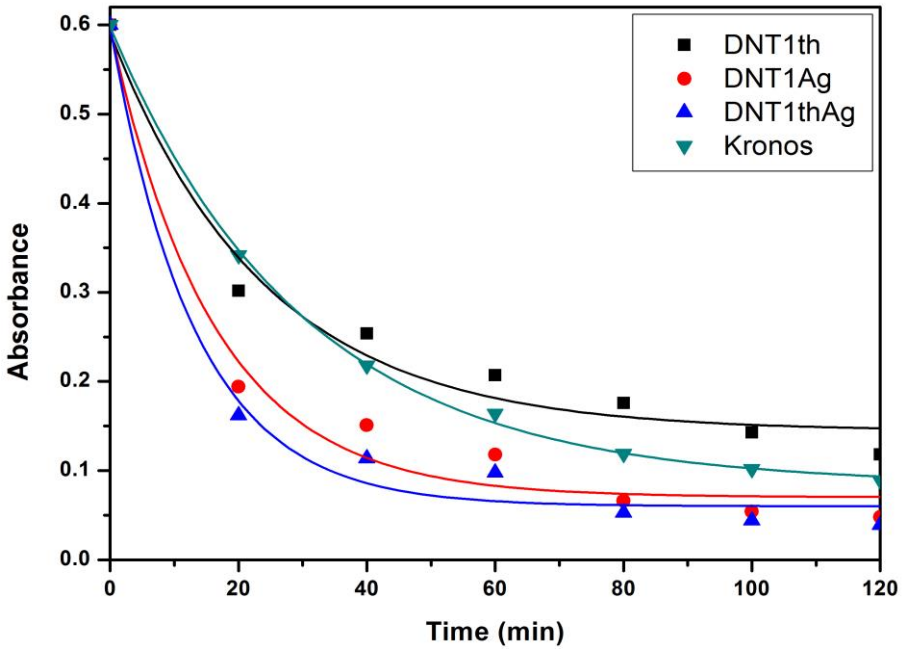
UV-vis absorption spectra



Photocatalytic Properties by Methylene Blue

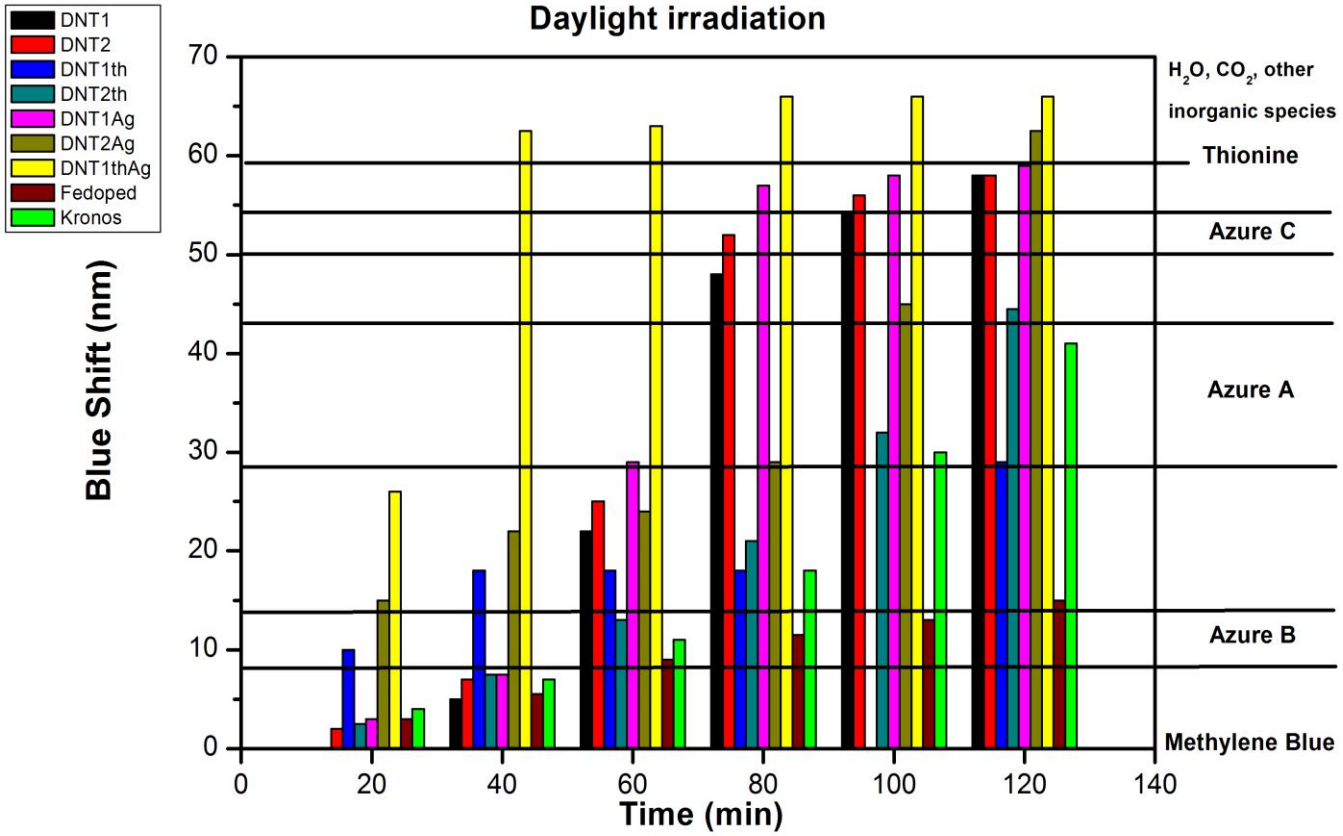


Under daylight irradiation



Under visible light irradiation

N-Demethylation



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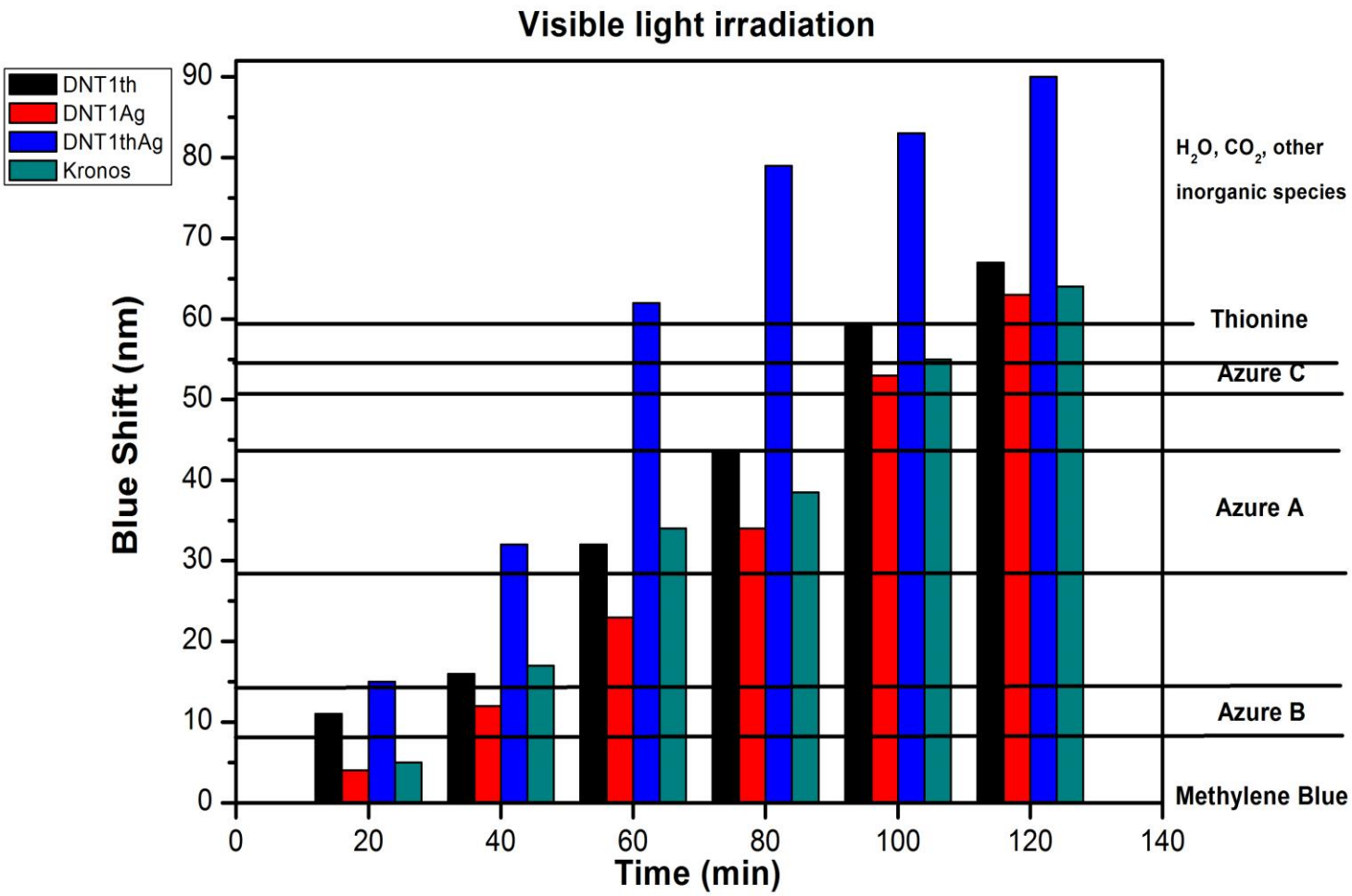
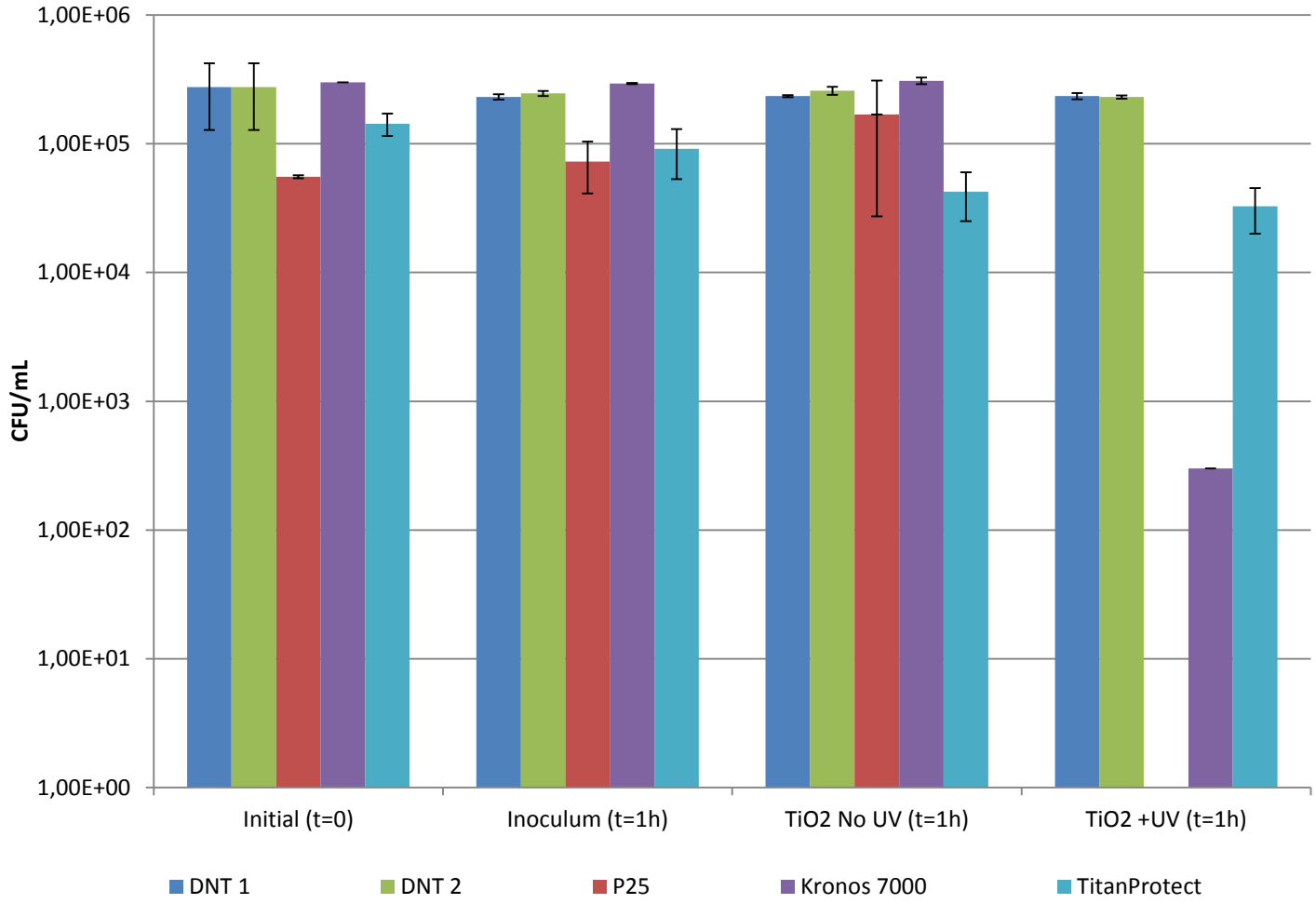


Photocatalytic Inactivation of E.Coli



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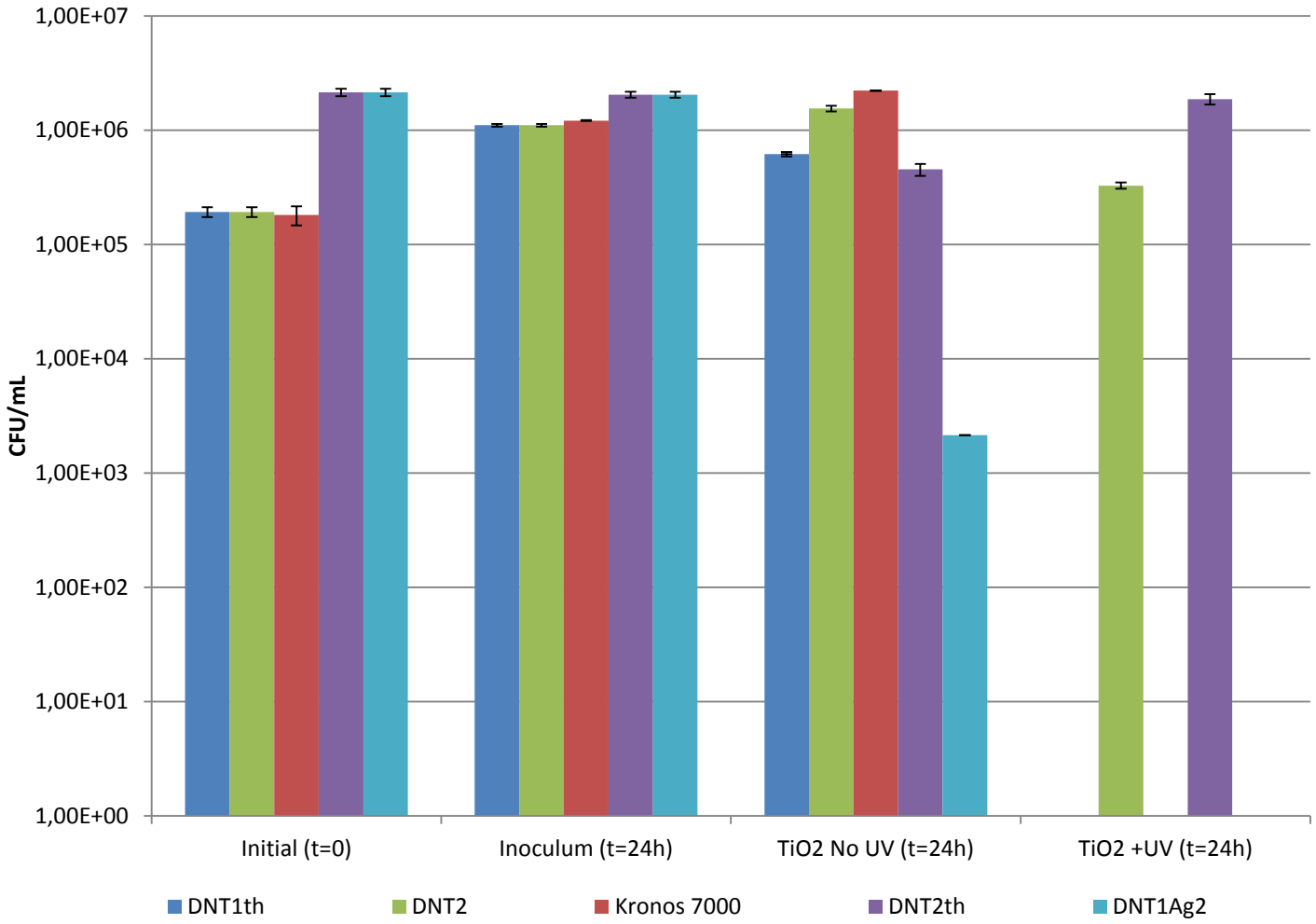
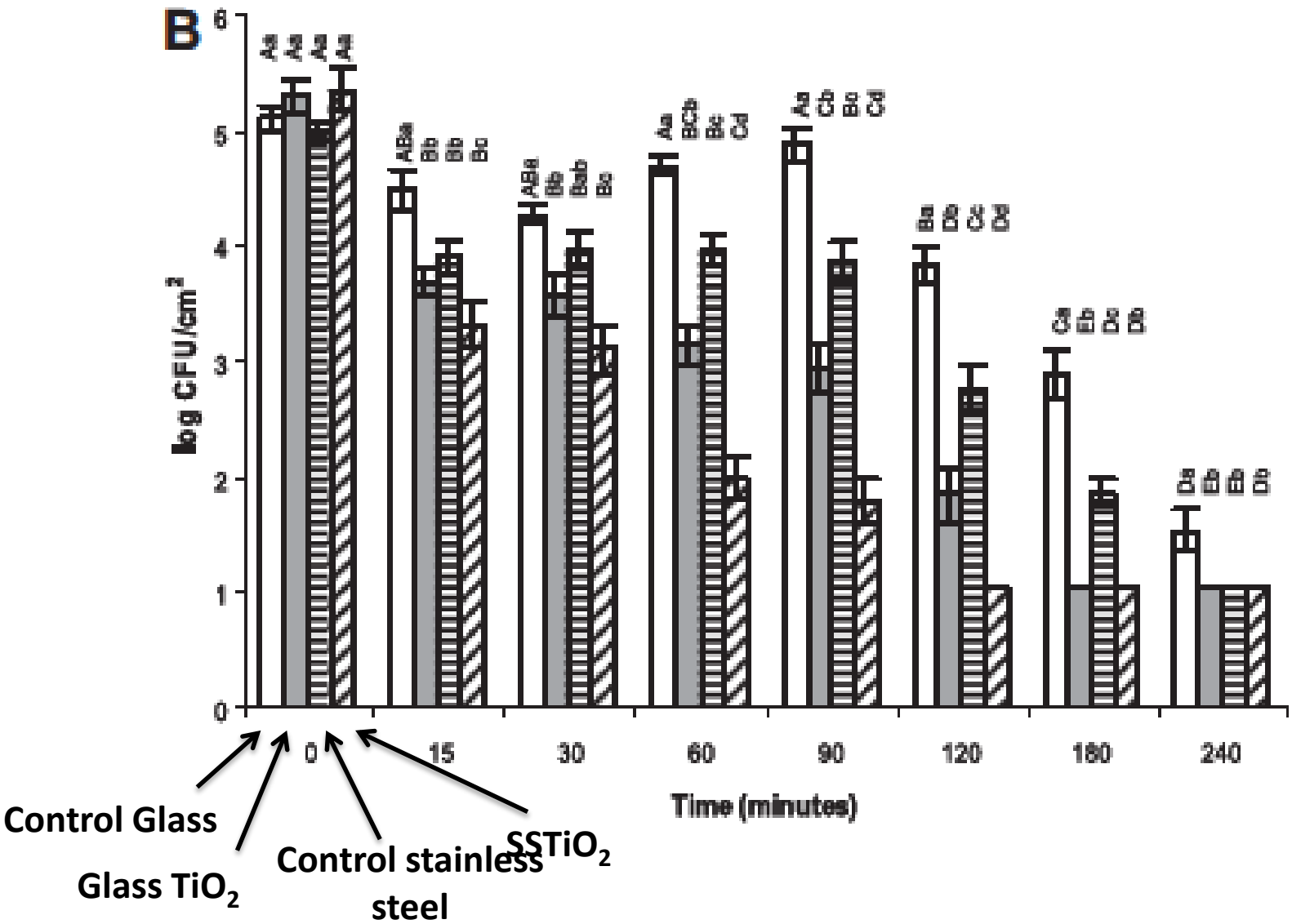


Listeria monocytogenes ScottA biofilm population



Thank You
for your attention

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