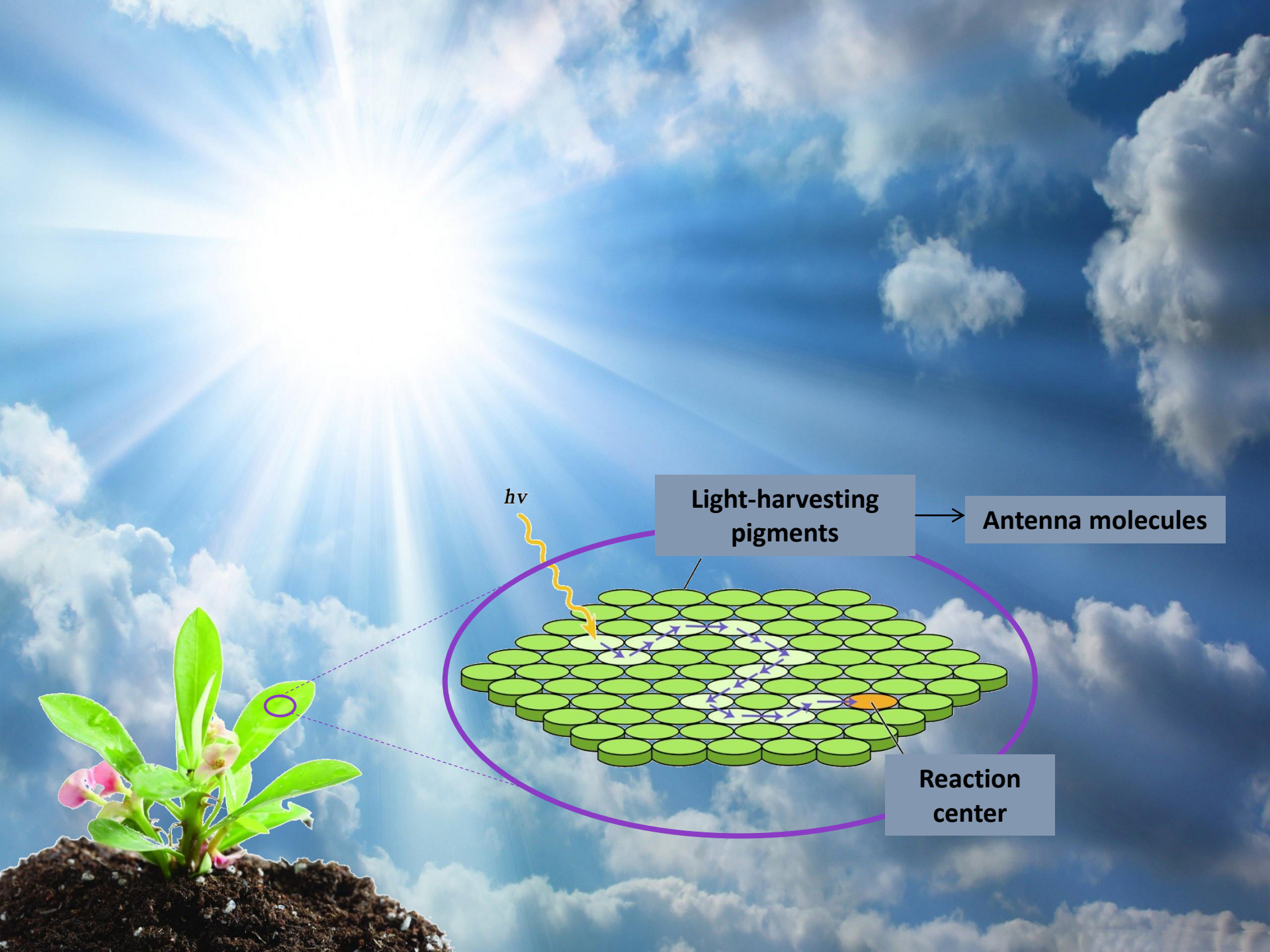


MgAPO-based nanostructured materials: in the search of one-directional antenna systems

Rebeca Sola Llano

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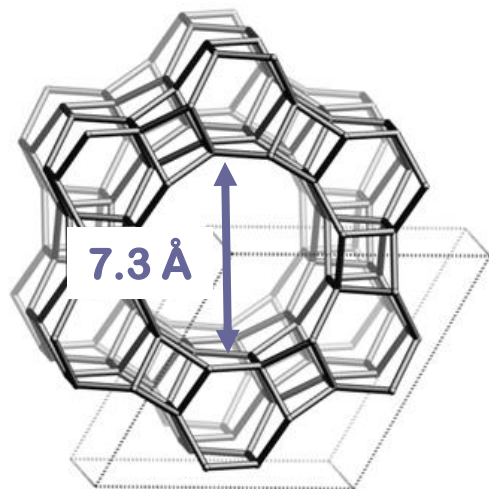


$h\nu$

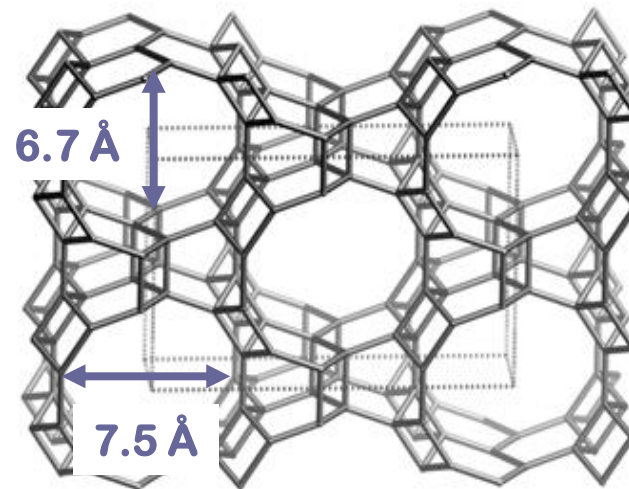
Light-harvesting pigments

Antenna molecules

Reaction center



MgAPO-5 (AFI)



MgAPO-36 (ATS)



Neutral

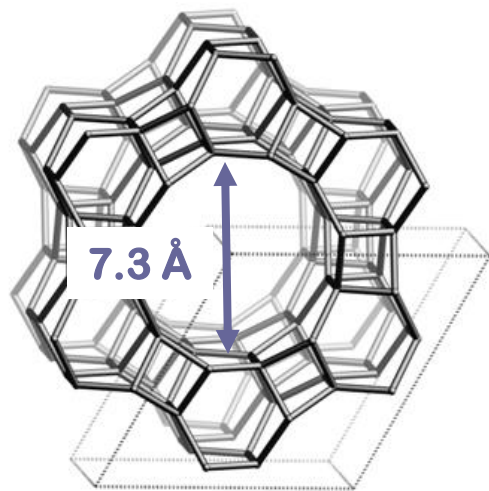
+Mg



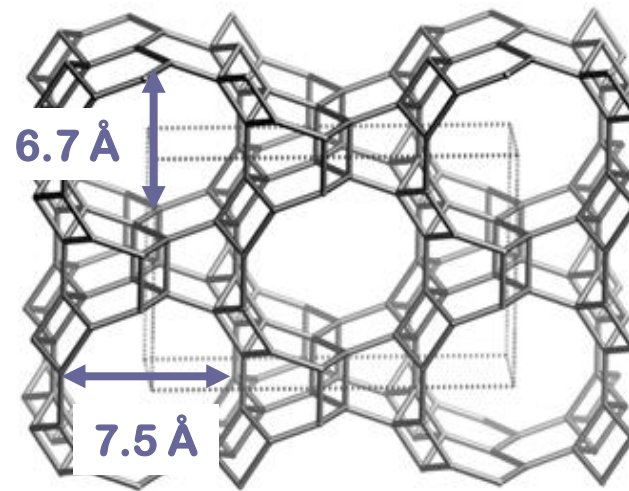
Negative net charge

Inclusion of cationic dyes during crystallization

- Avoids traffic jam at the entrances of the pores; more homogeneous filling.
- Allows the incorporation of dyes with molecular dimensions exceeding the pore openings.
- Tight fitting.
- Reduces sample preparation time.



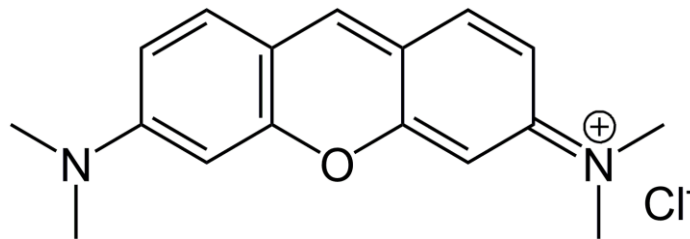
MgAPO-5 (AFI)

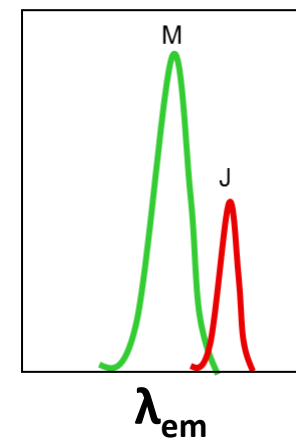
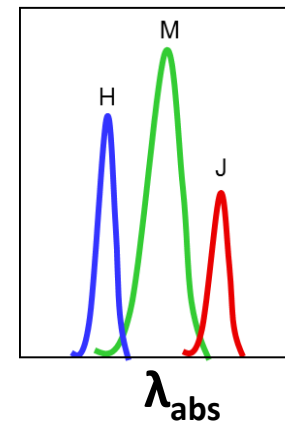
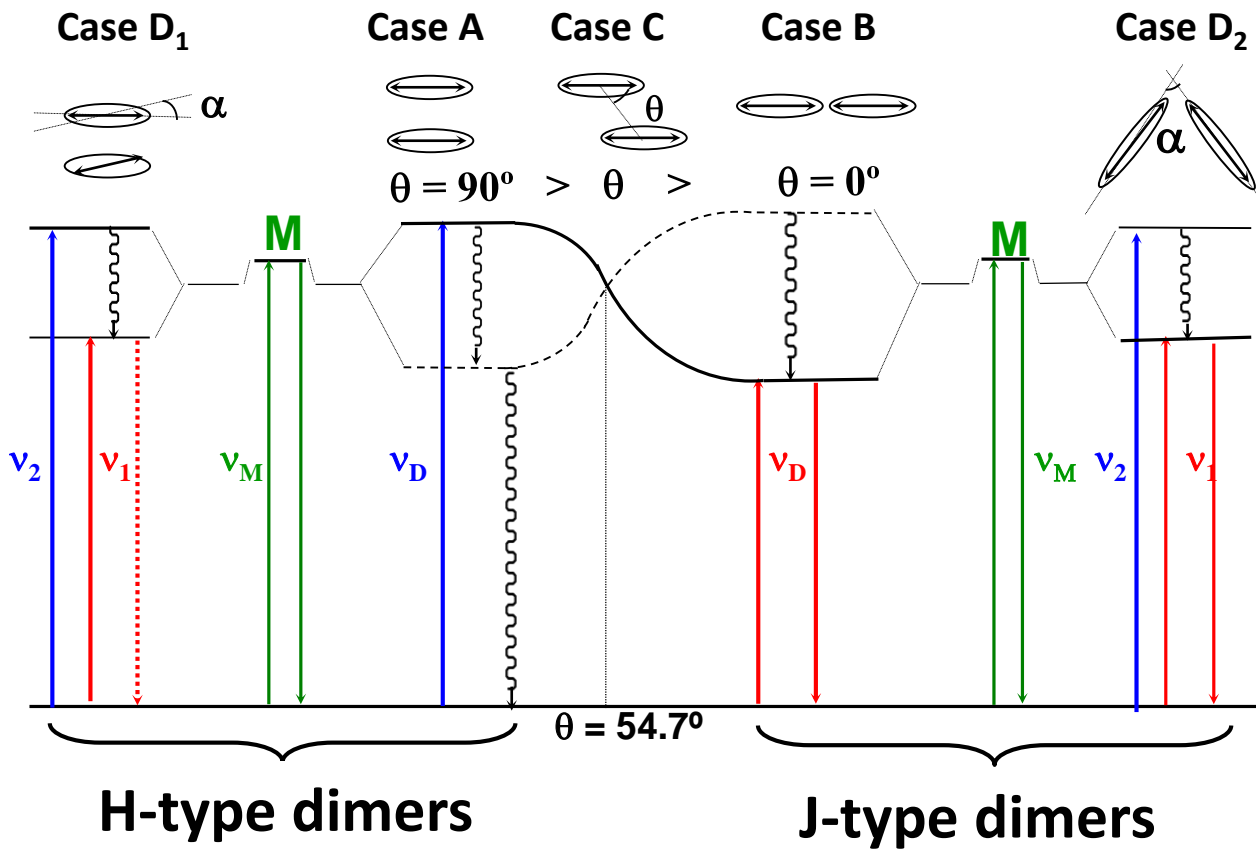


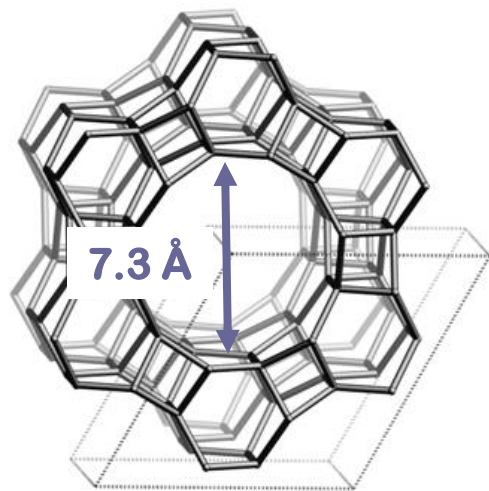
MgAPO-36 (ATS)

Pyronin Y (PY)

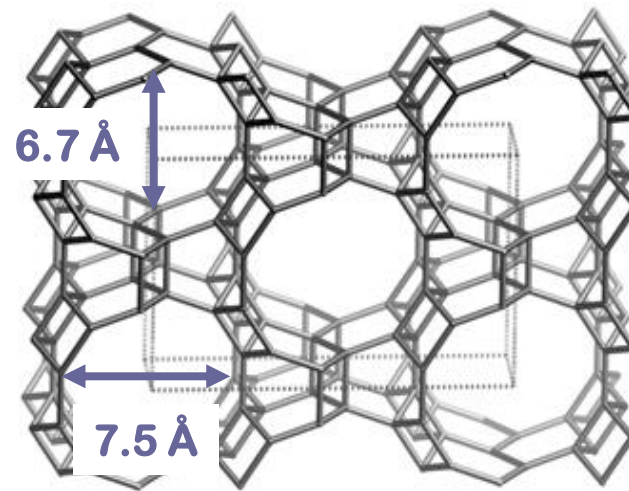
- 15.0Å x 6.1Å x 3.0Å
- Good candidate for sensing the aggregation state.





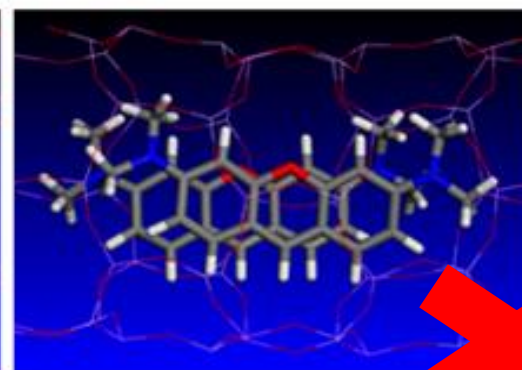
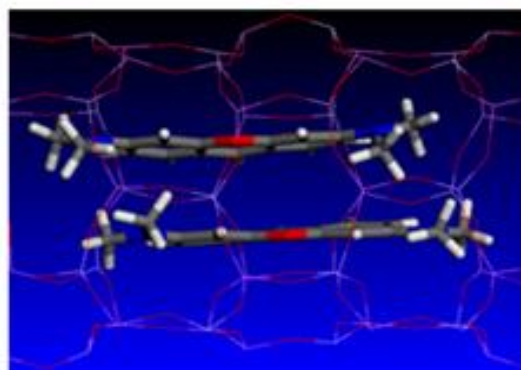
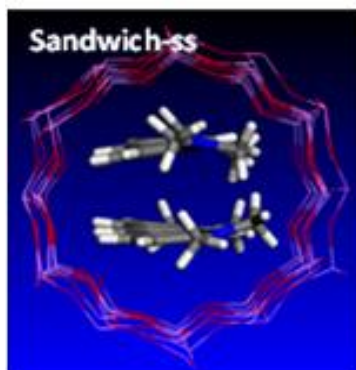


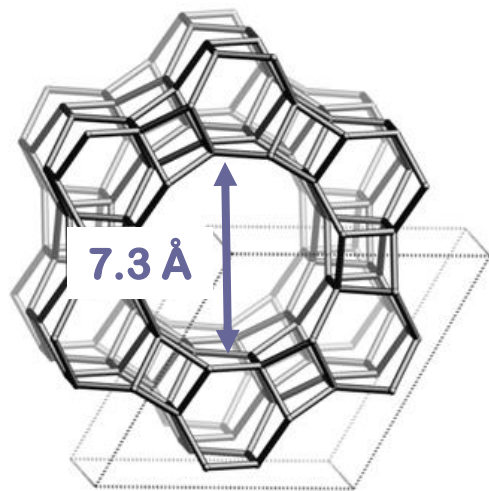
MgAPO-5 (AFI)



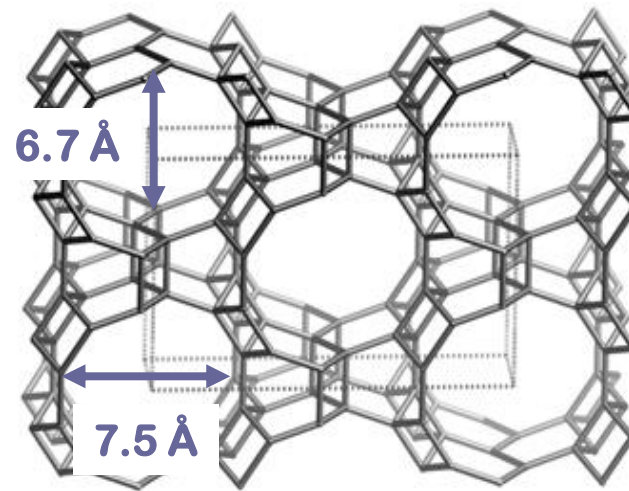
MgAPO-36 (ATS)

PY/AFI



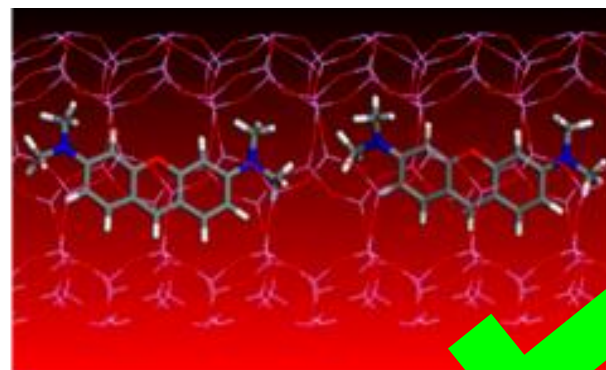
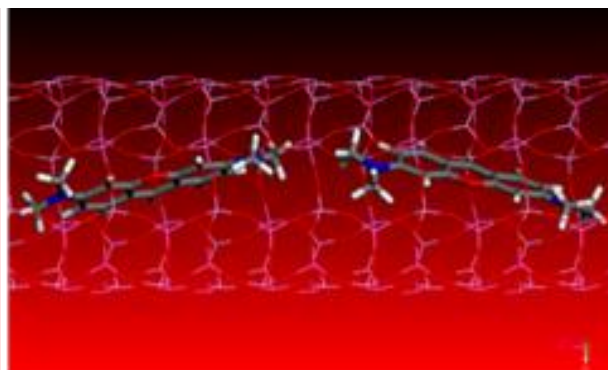
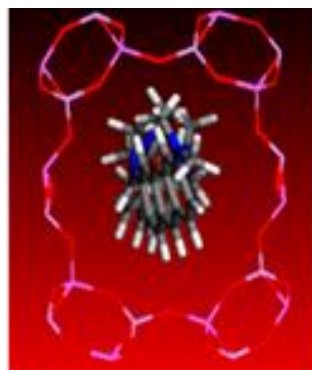


MgAPO-5 (AFI)



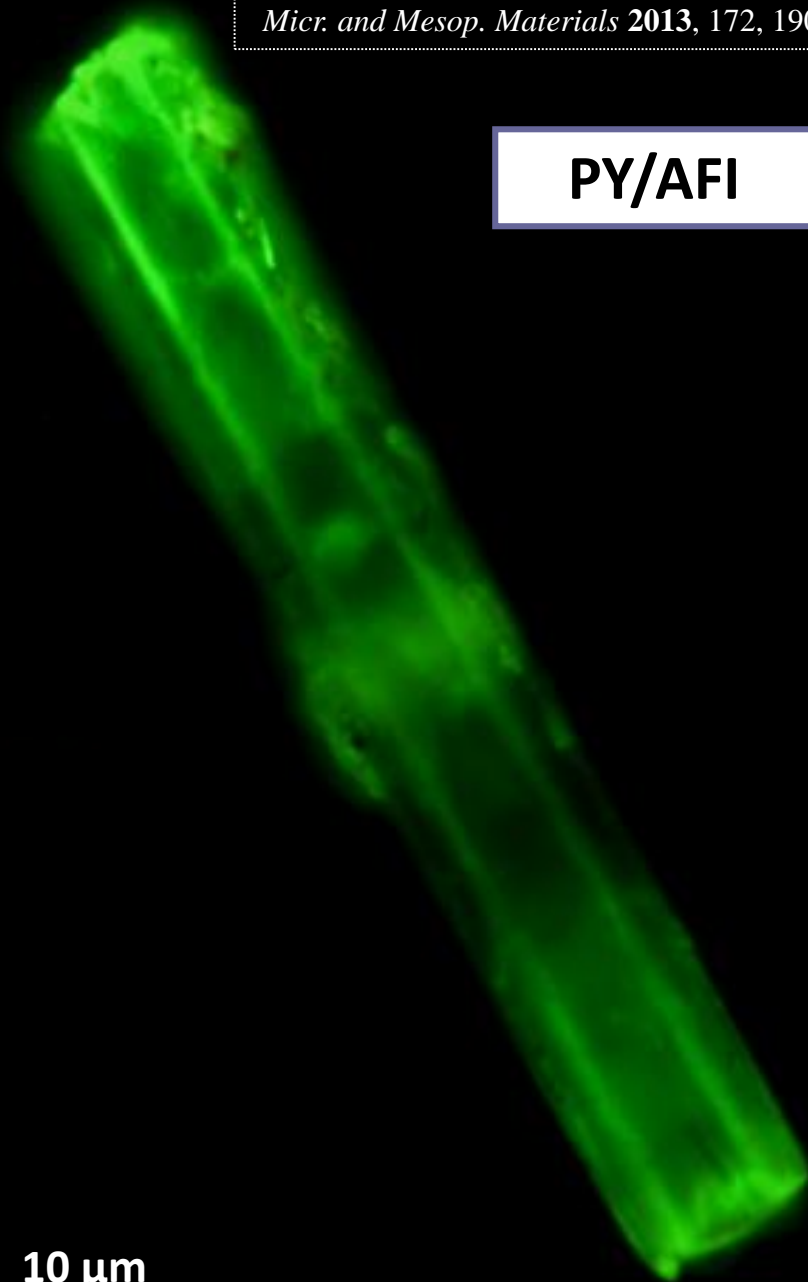
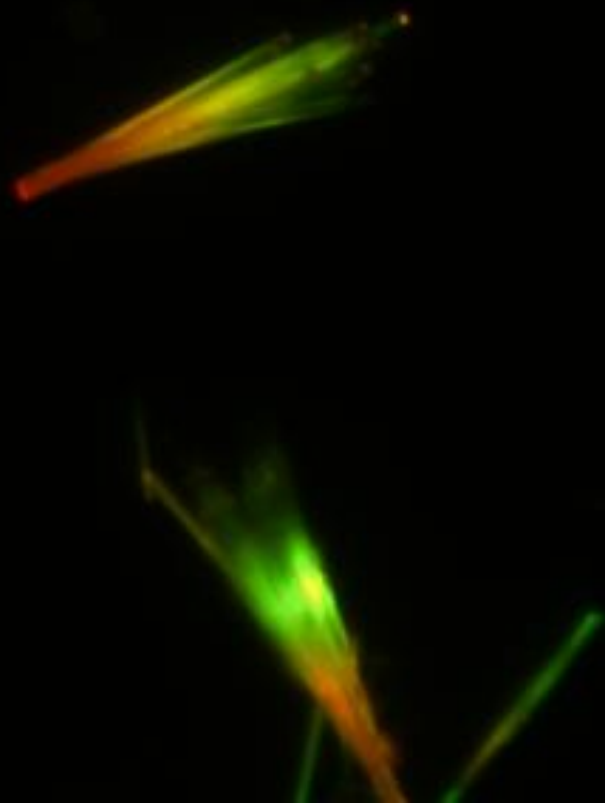
MgAPO-36 (ATS)

PY/ATS



PY/ATS

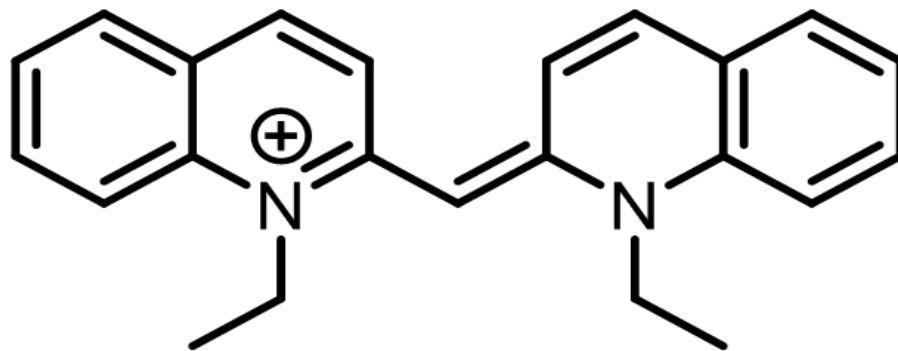
PY/AFI



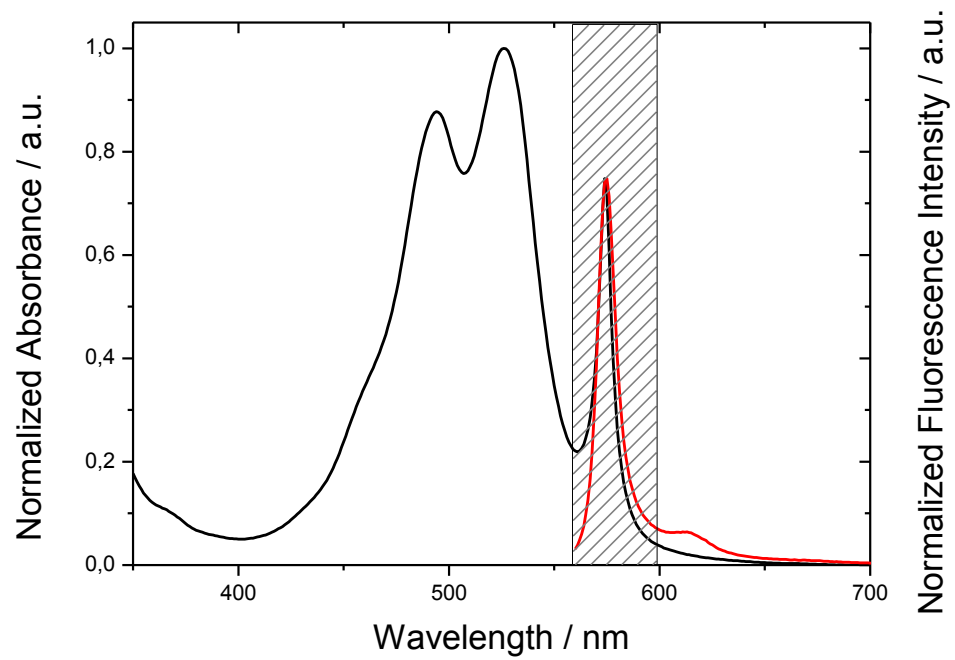
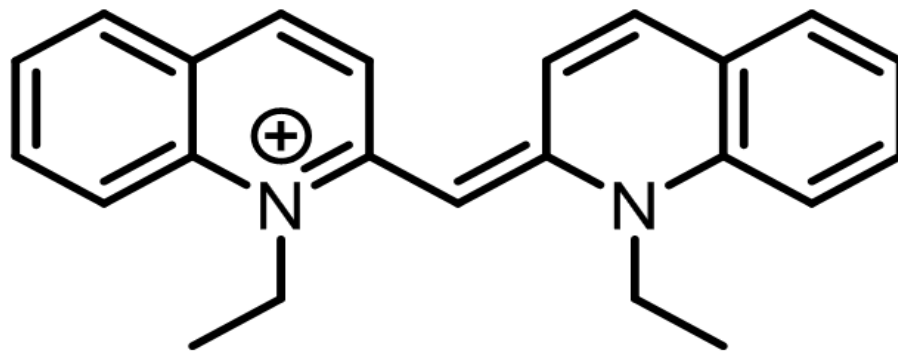
20 μm

10 μm

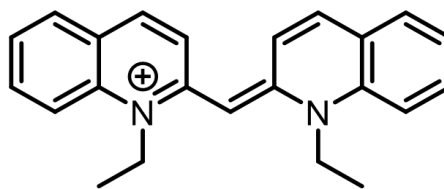
PIC



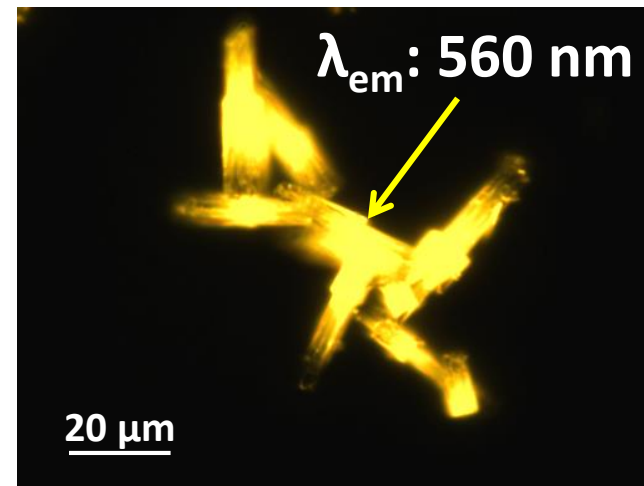
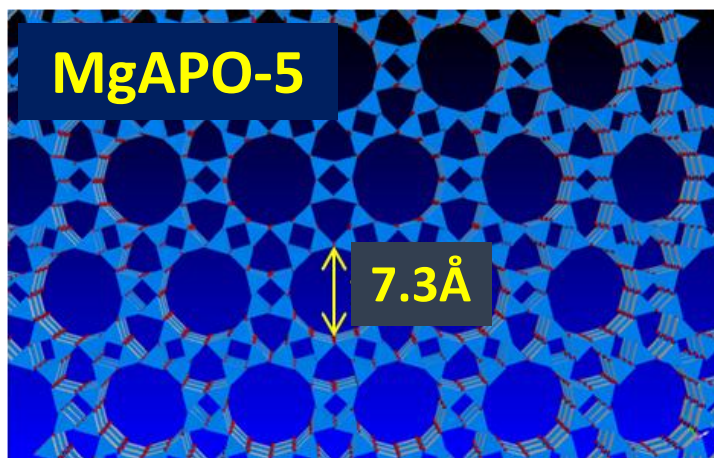
PIC



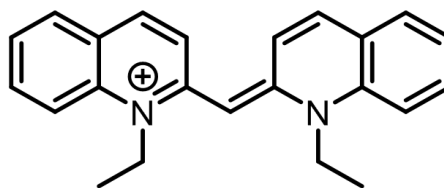
PIC/AFI and PIC/ATS



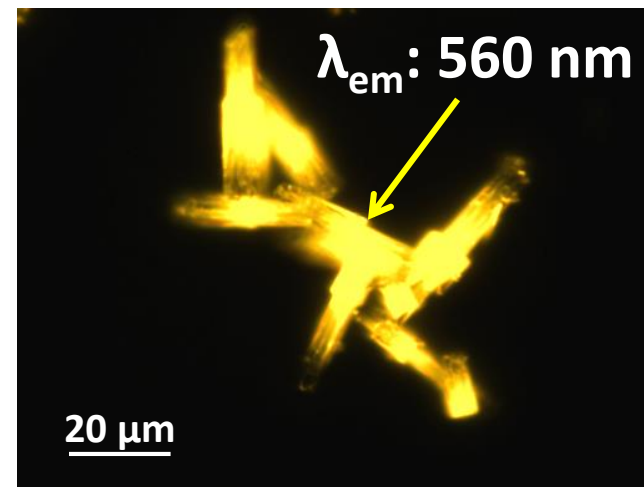
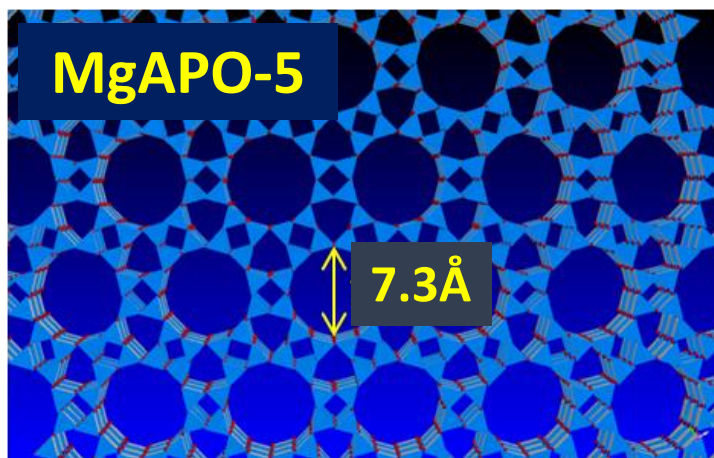
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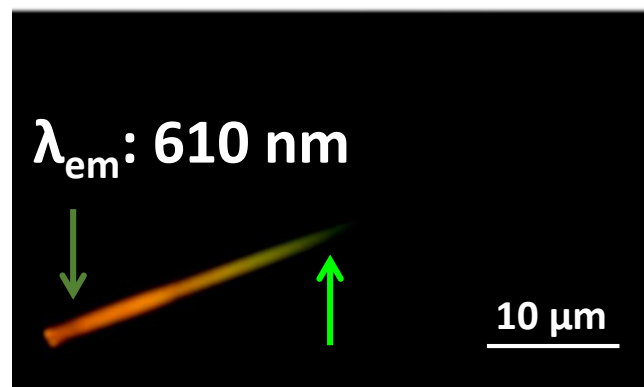
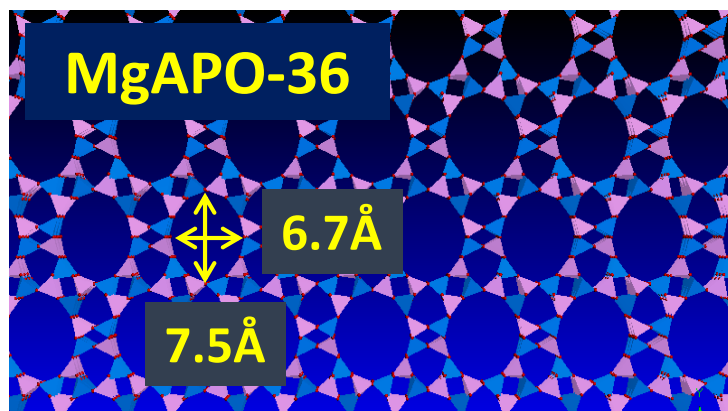
PIC/AFI and PIC/ATS

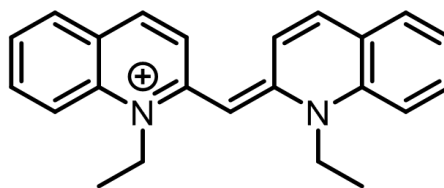
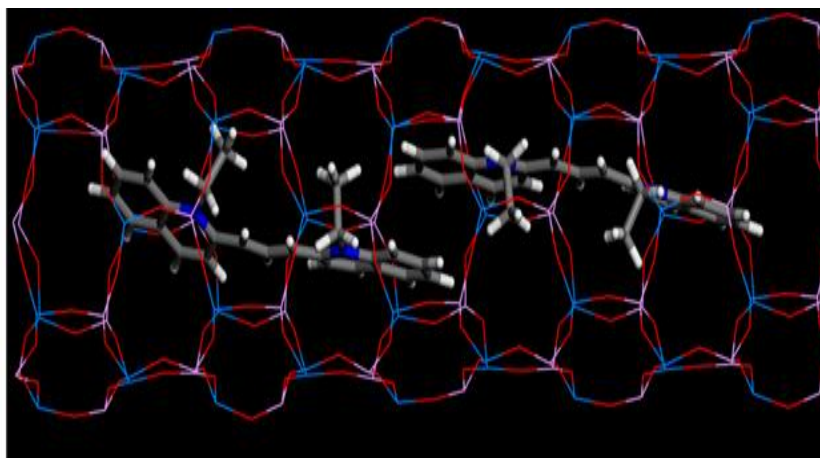
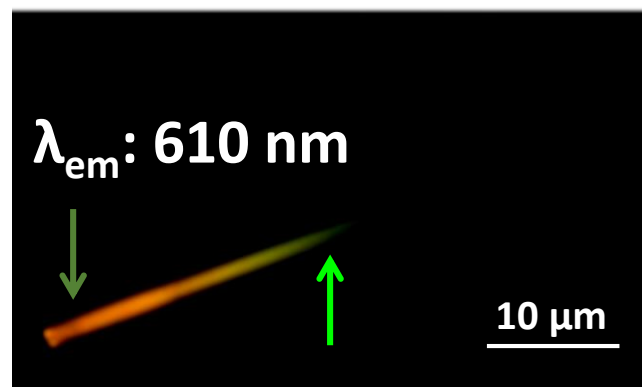
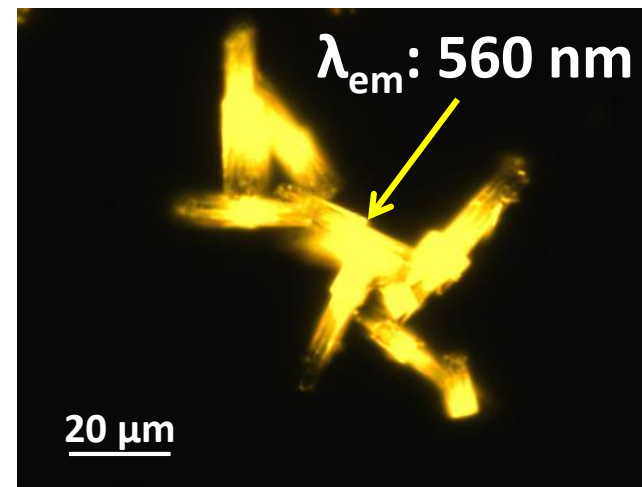
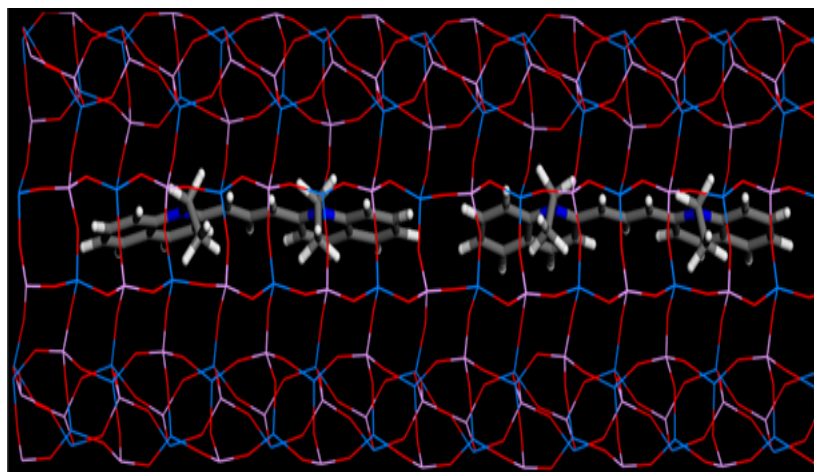


PIC/AFI

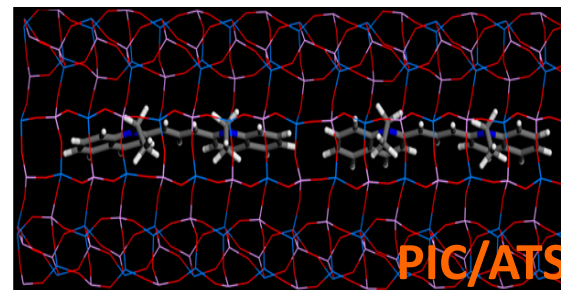
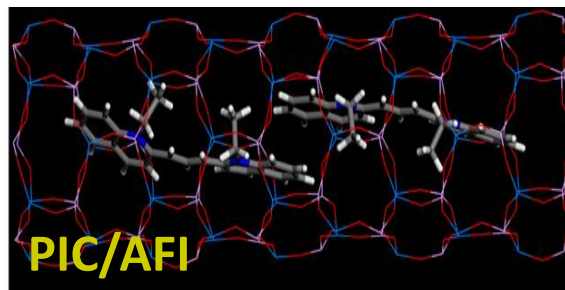
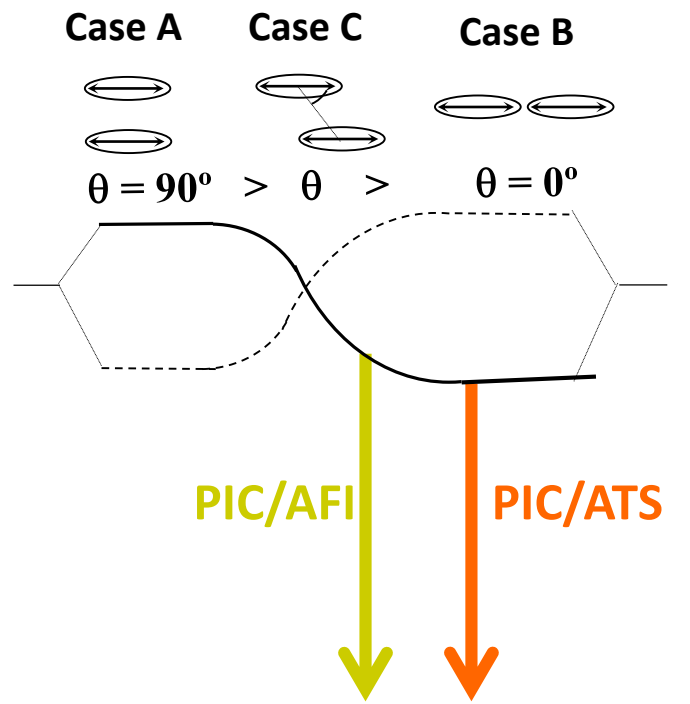


PIC/ATS

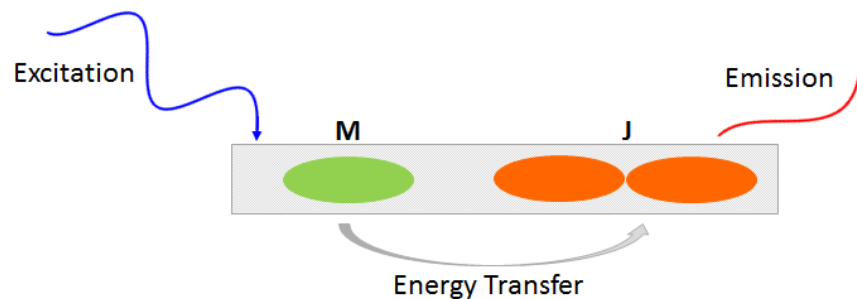


PIC/AFI and PIC/ATS**PIC/AFI****PIC/ATS**

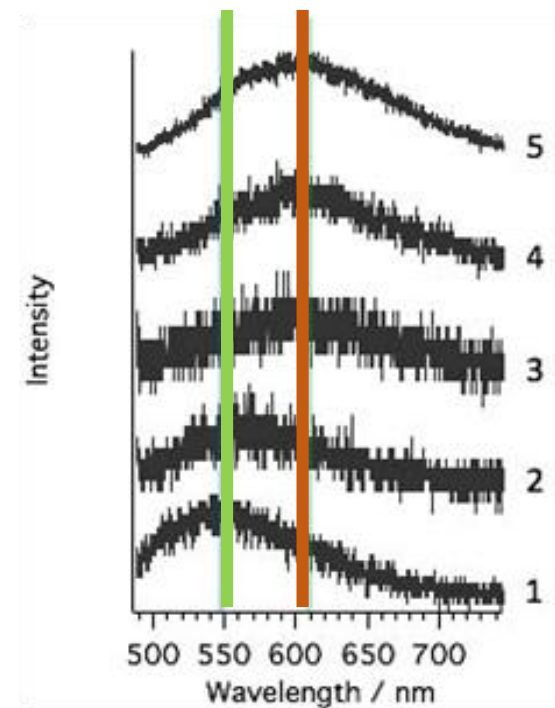
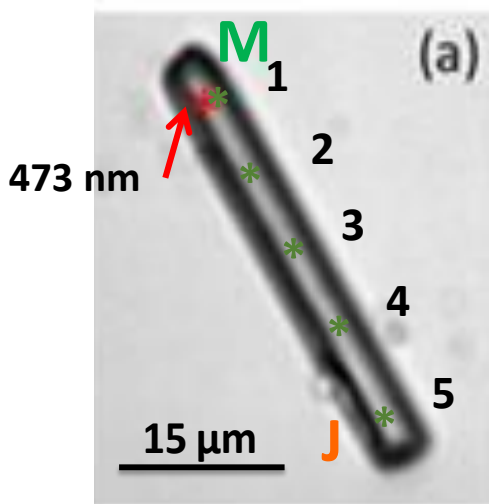
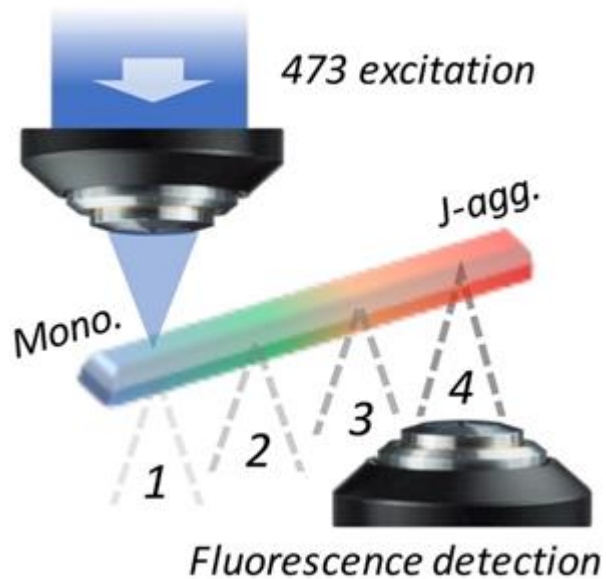
PIC/AFI and PIC/ATS

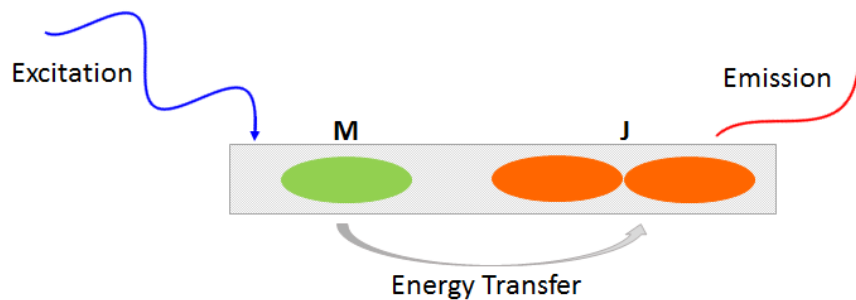
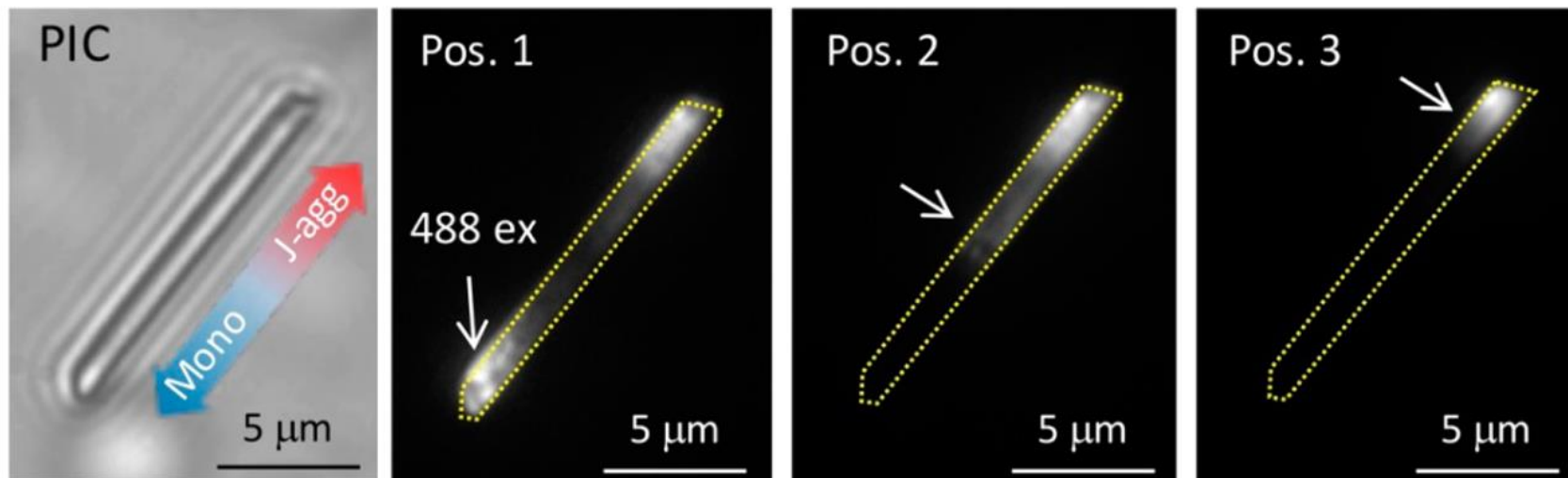


PIC/ATS



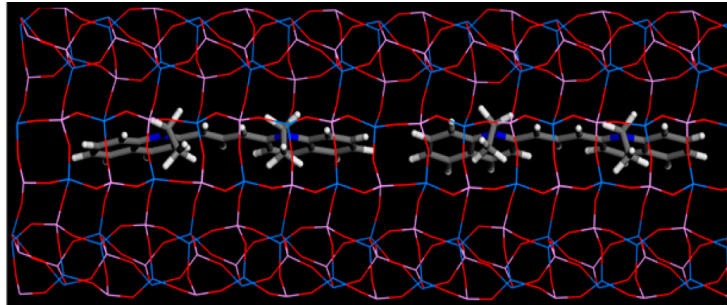
Remote excitation experiments



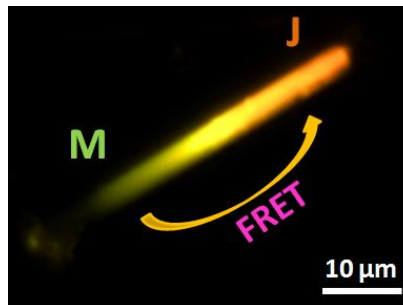
PIC/ATS**Remote excitation experiments**

Conclusion

- The encapsulation of dyes with interesting properties into MgAPOs through the crystallization inclusion method can render hybrid artificial antenna systems.



- PIC/ATS: efficient, one-directional antenna.



Acknowledgement



➤ Dr. Virginia Martínez-Martínez

➤ Prof. Iñigo López Arbeloa



□ Dr. Luis Gómez-Hortigüela

□ Dr. Almudena Alfayate

□ Prof. Joaquín Pérez-Pariente



❖ Dr. Yasuhiko Fujita

❖ Dr. Eduard Fron

❖ Dr. Hiroshi Uji-I

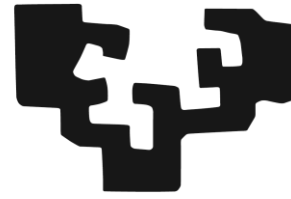
❖ Shuichi Toyouchi

KU LEUVEN





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UPV EHU



MgAPO-based nanostructured materials: in the search of one-directional antenna systems

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