



New coordination compounds and composite materials with potential applications in the biological, catalytic or sensor fields

**Gruppo di ricerca presso la Sezione di Chimica,
via S. Agostino 1, 62032 Camerino (MC)**



Prof. Fabio Marchetti



Prof. Riccardo Pettinari



Dr.ssa Alessia Tombesi



Prof. Corrado Di Nicola



Prof. Claudio Pettinari

Research Lines

```
graph TD; A[Research Lines] --> B[New anticancer molecules]; A --> C[Antimicrobial materials]; A --> D[Luminescent materials]; A --> E[New pirazolate-based MOFs]
```

**New anticancer
molecules**

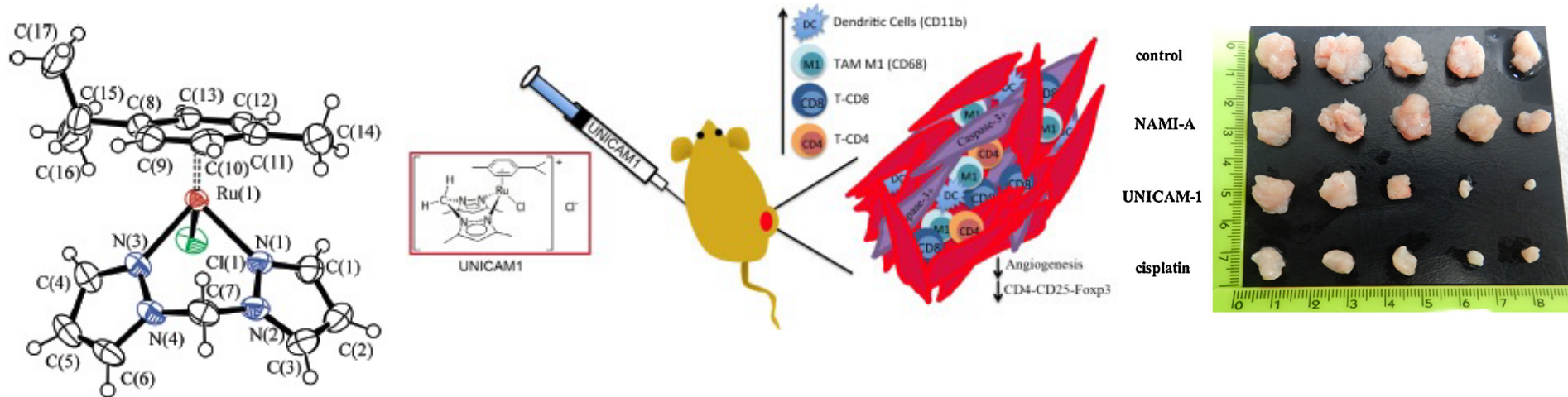
**Antimicrobial
materials**

**Luminescent
materials**

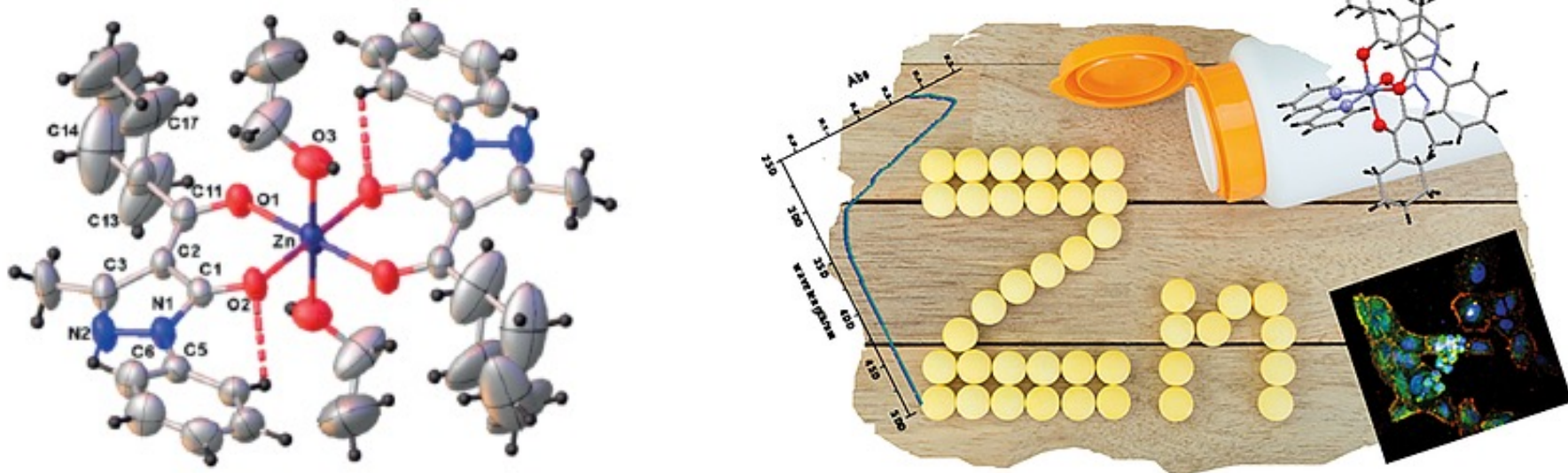
**New pirazolate-
based MOFs**

New anticancer molecules

Ruthenium-based anticancer molecules

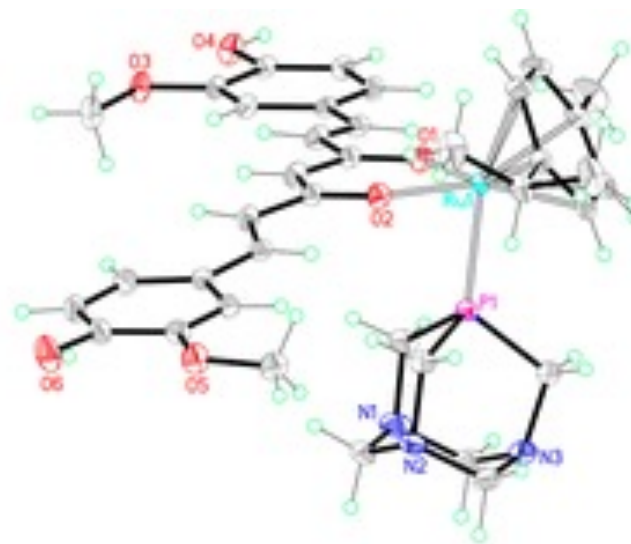


Zinc-based anticancer molecules

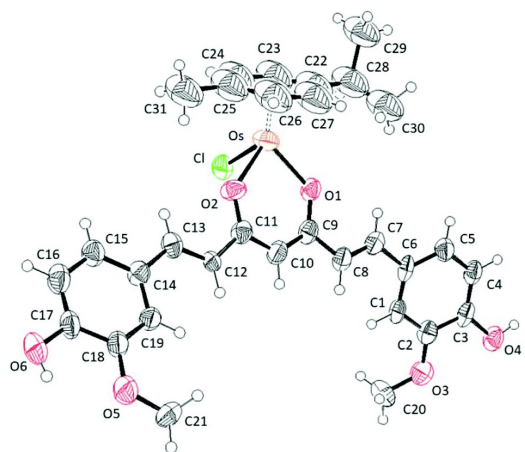


New anticancer molecules

Ruthenium-arene complexes of curcumin

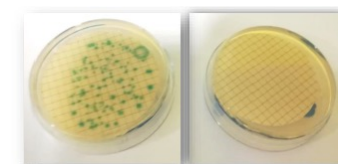
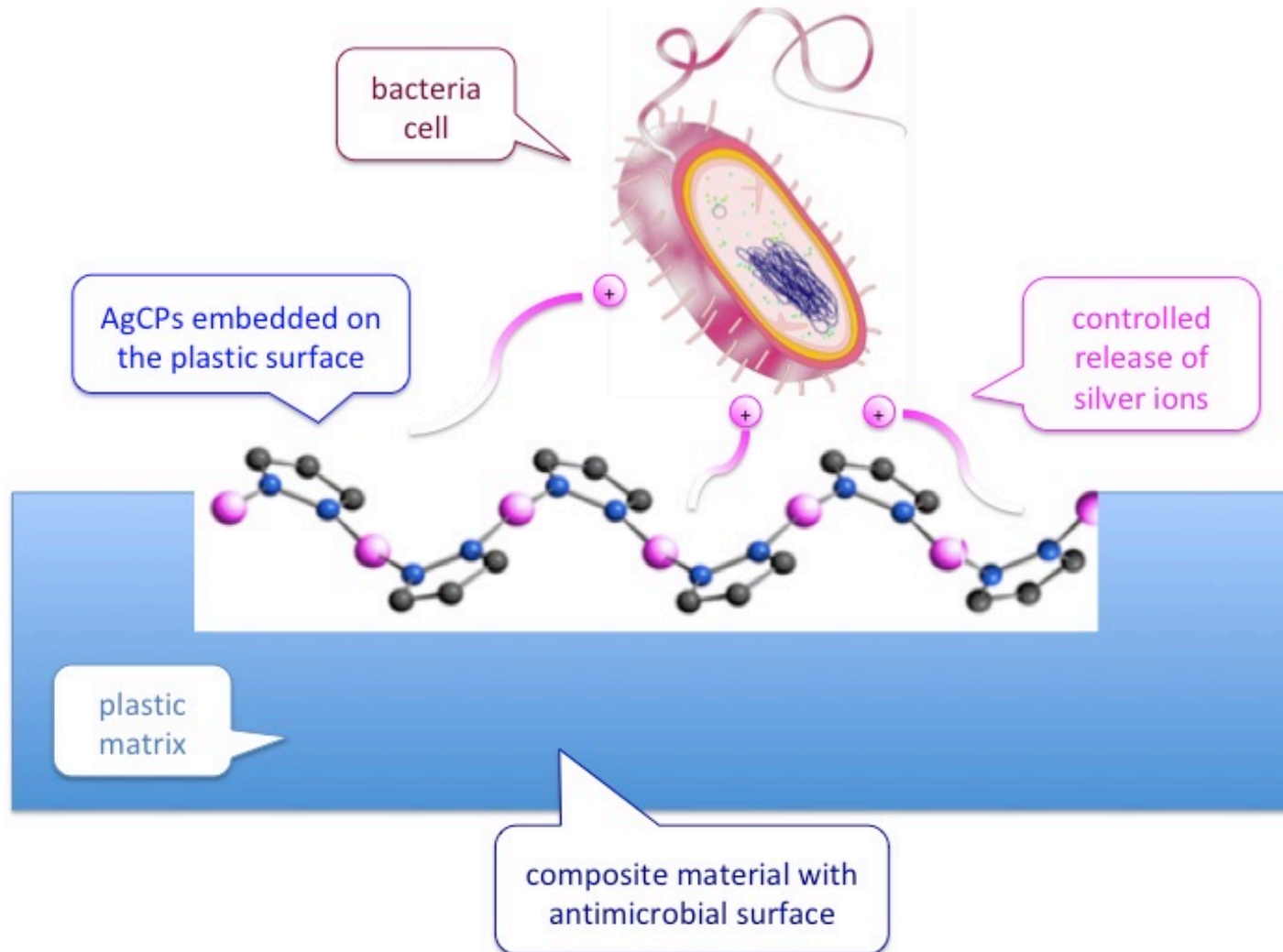


Osmium-arene complexes of curcumin



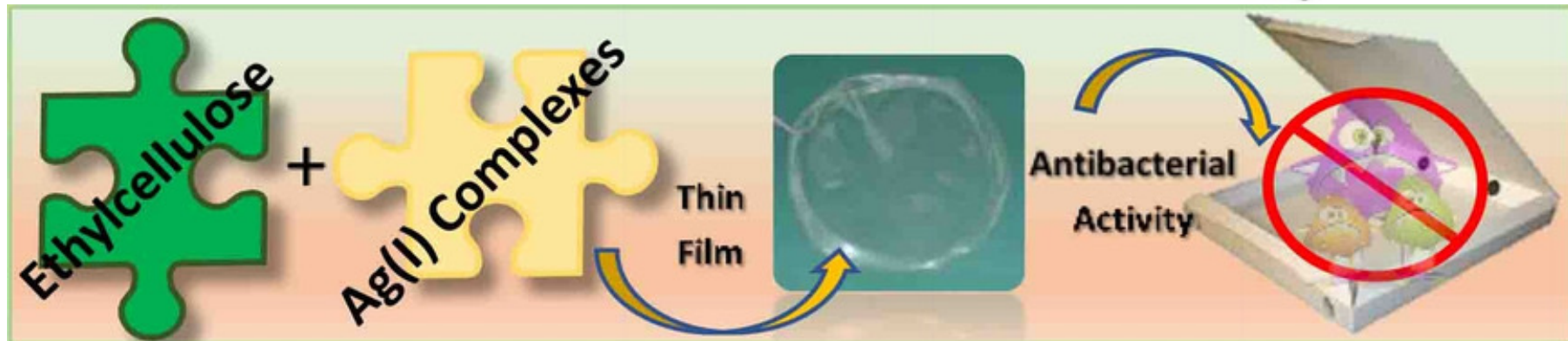
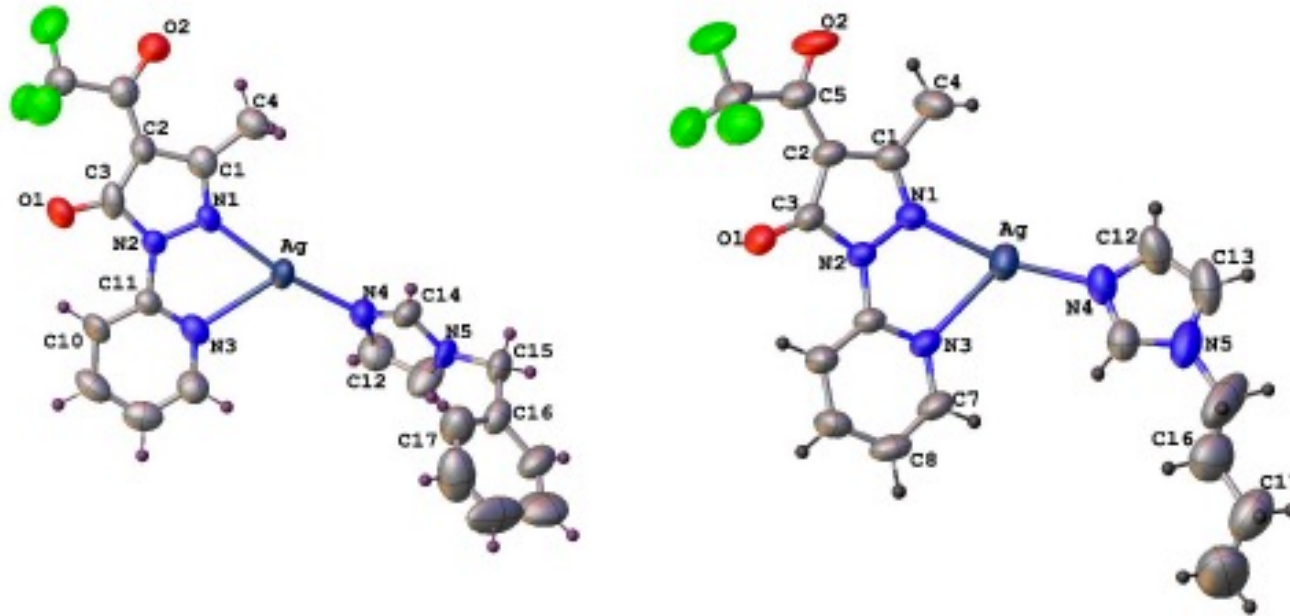
Antimicrobial materials

Ag-based antimicrobial coordination polymers

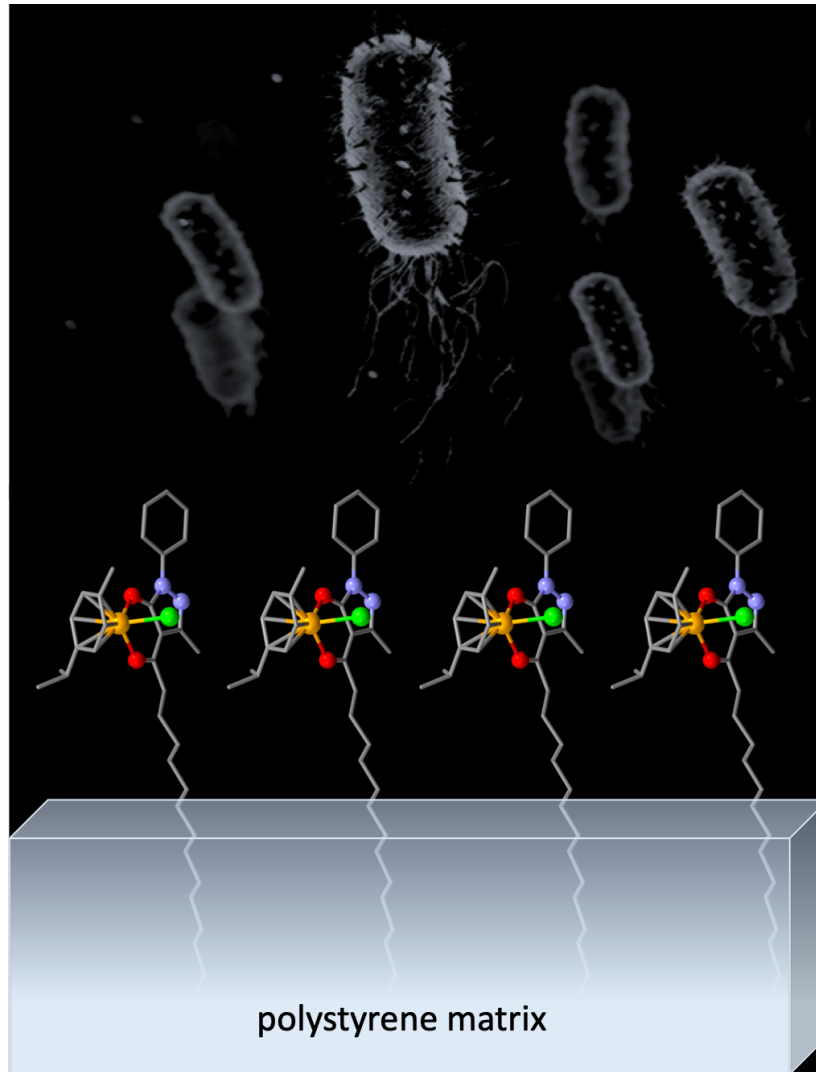


Antimicrobial materials

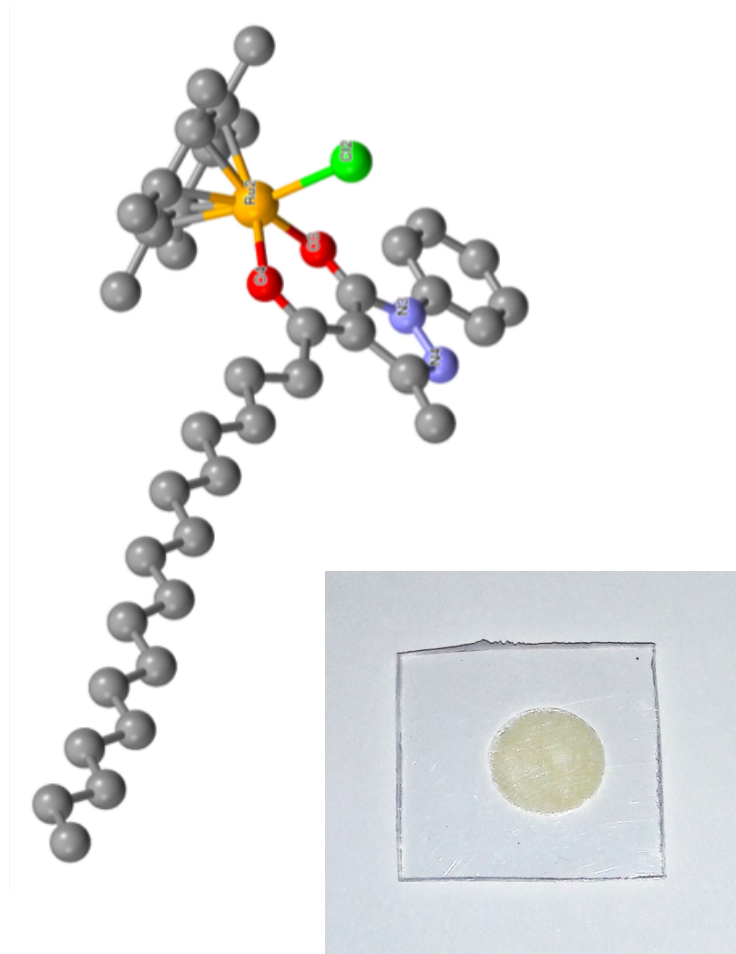
Ag-based antimicrobial materials



Antimicrobial materials

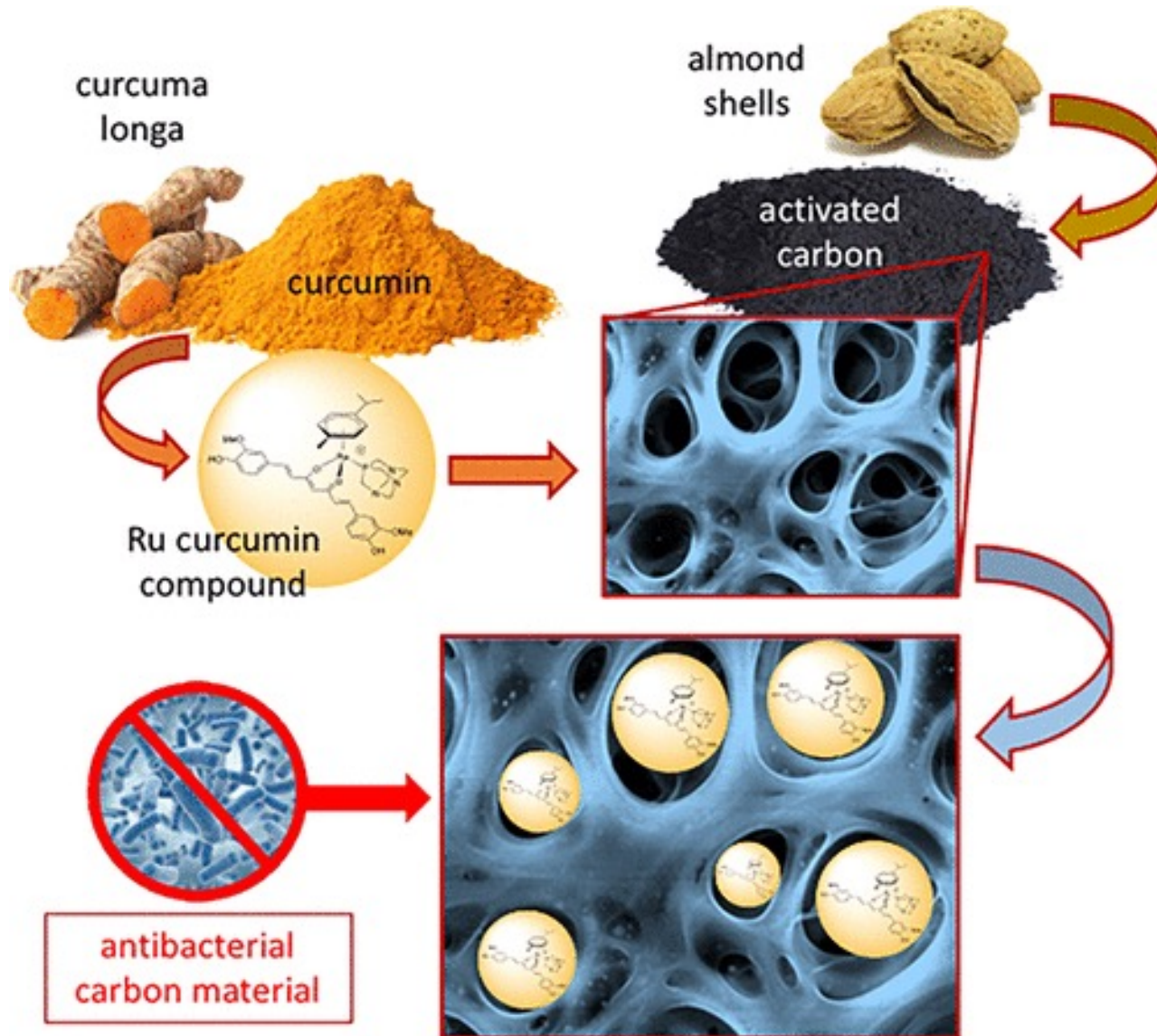


Ru-based antimicrobial materials

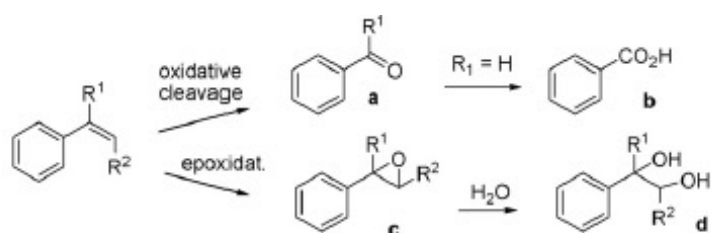
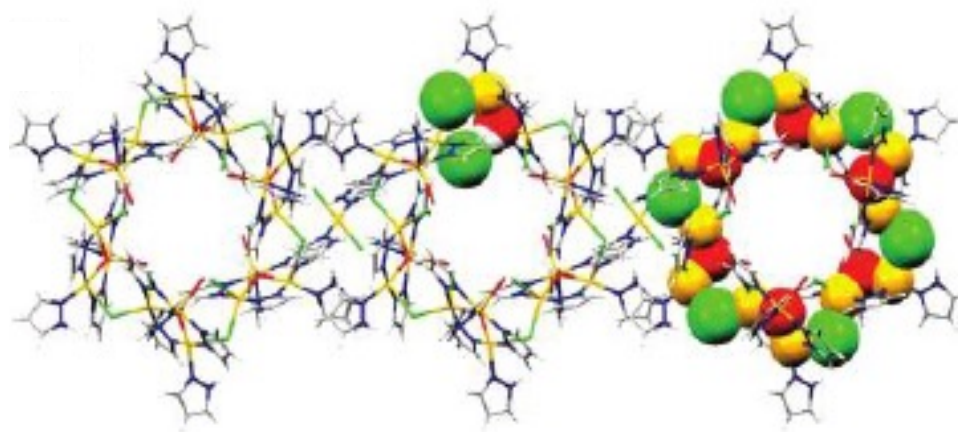
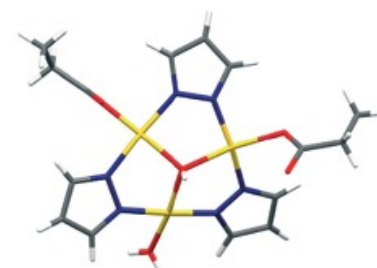
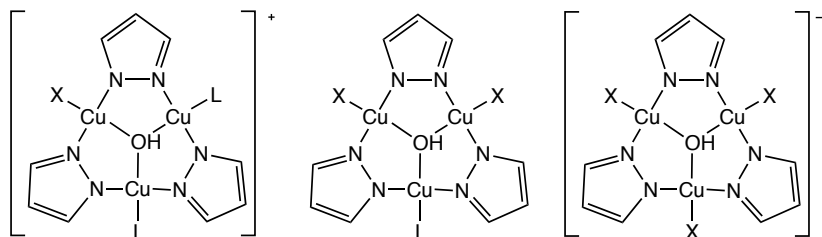


Tethering (Arene)Ru(II) Acylpyrazolone complex

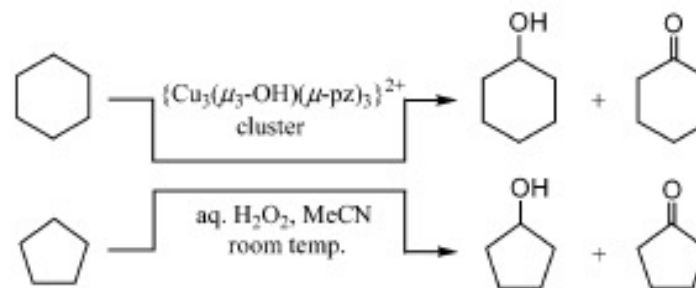
Antimicrobial materials



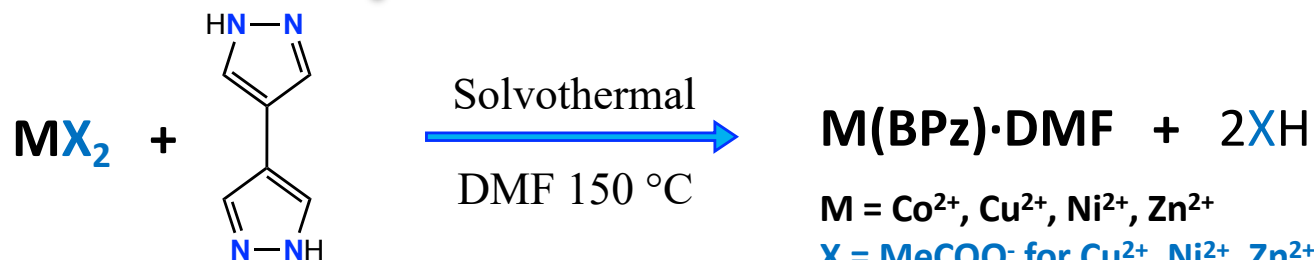
New pirazolate-based MOFs



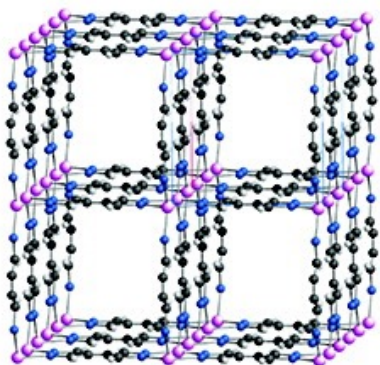
1: $\text{R}_1 = \text{R}_2 = \text{H}$; **2:** $\text{R}_1 = \text{Me}$, $\text{R}_2 = \text{H}$
3: $\text{R}_1 = \text{H}$, $\text{R}_2 = \text{Me}$



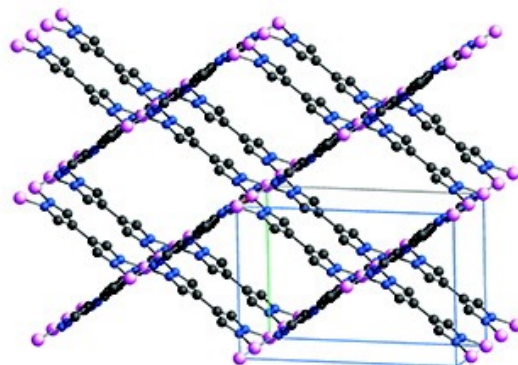
New pirazolate-based MOFs



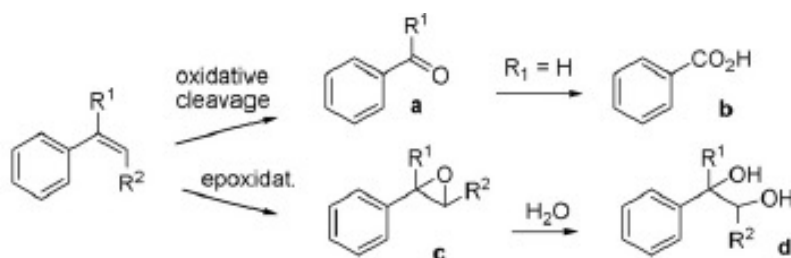
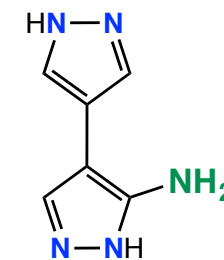
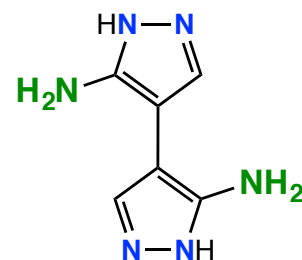
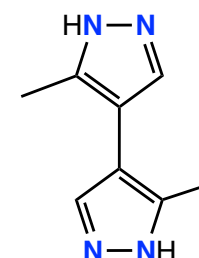
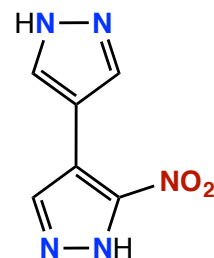
D = from 4.1 to 5.3 Å



Zn(BPz), CoBPz



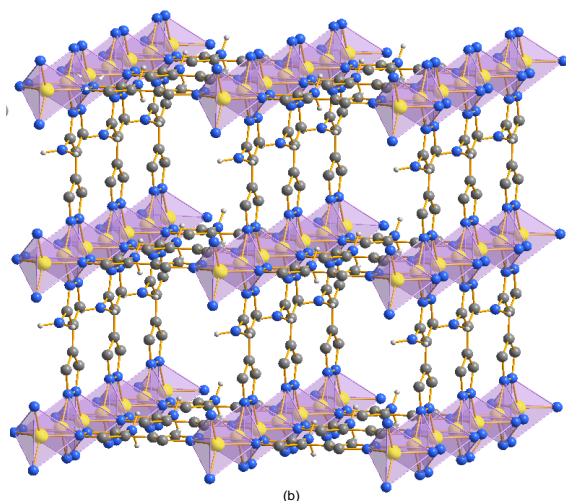
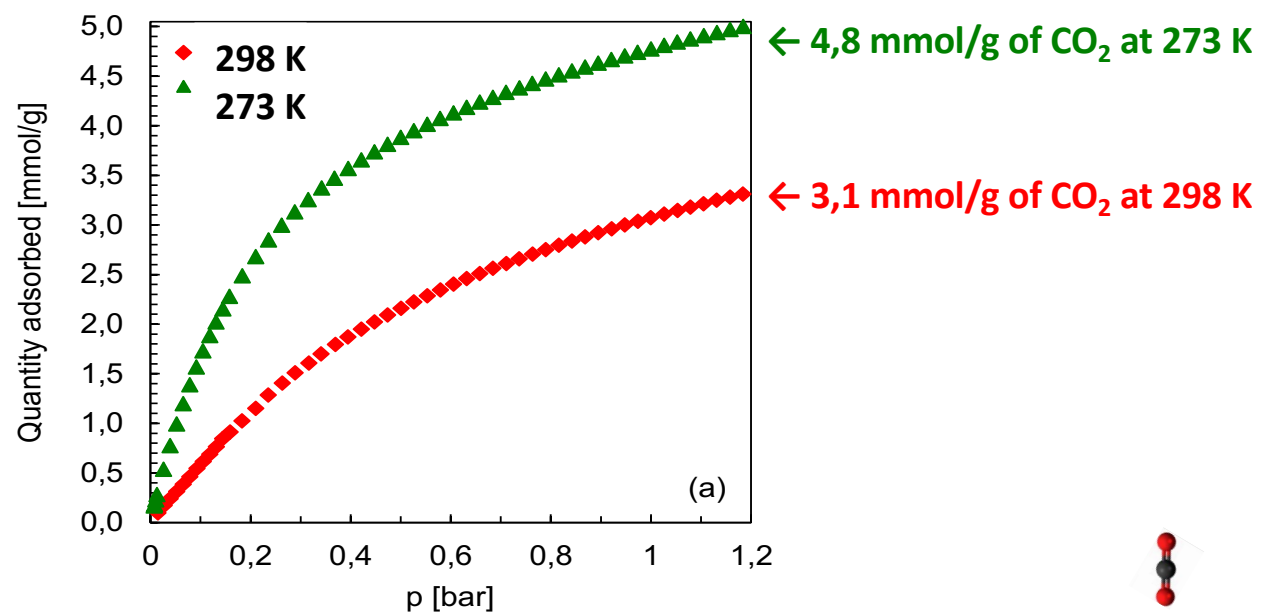
Ni(BPz), Cu(BPz)



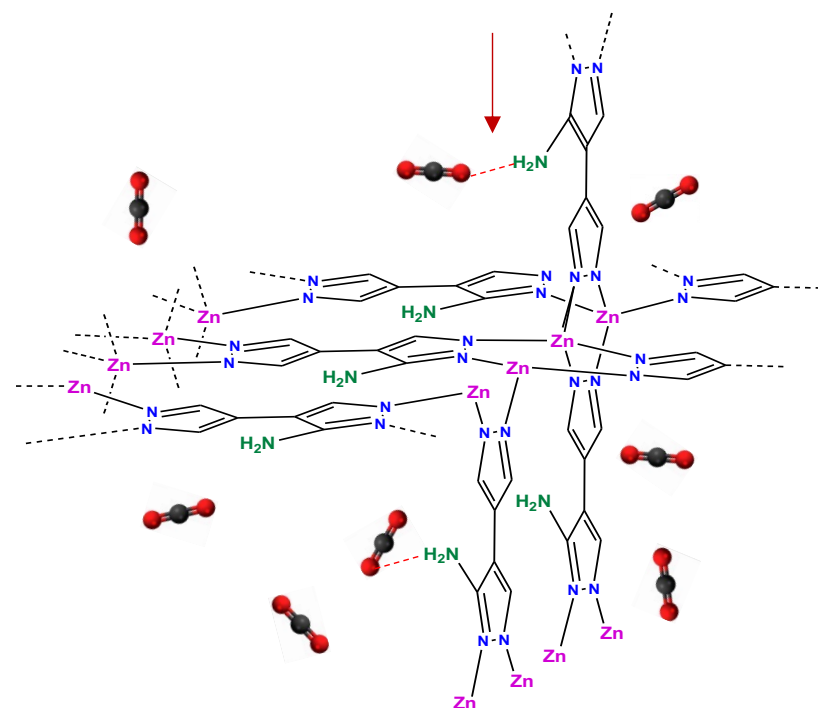
1: $\text{R}_1 = \text{R}_2 = \text{H}$; 2: $\text{R}_1 = \text{Me}$, $\text{R}_2 = \text{H}$
 3: $\text{R}_1 = \text{H}$, $\text{R}_2 = \text{Me}$

New pirazolate-based MOFs

CO₂ adsorption isotherms of Zn(BPZNH₂)

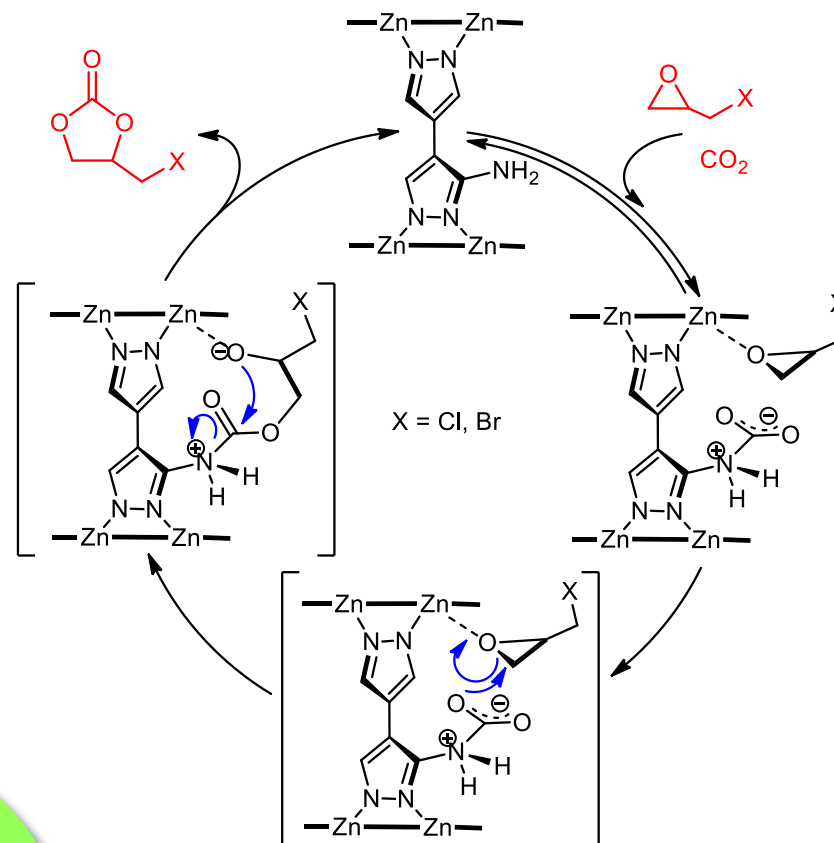
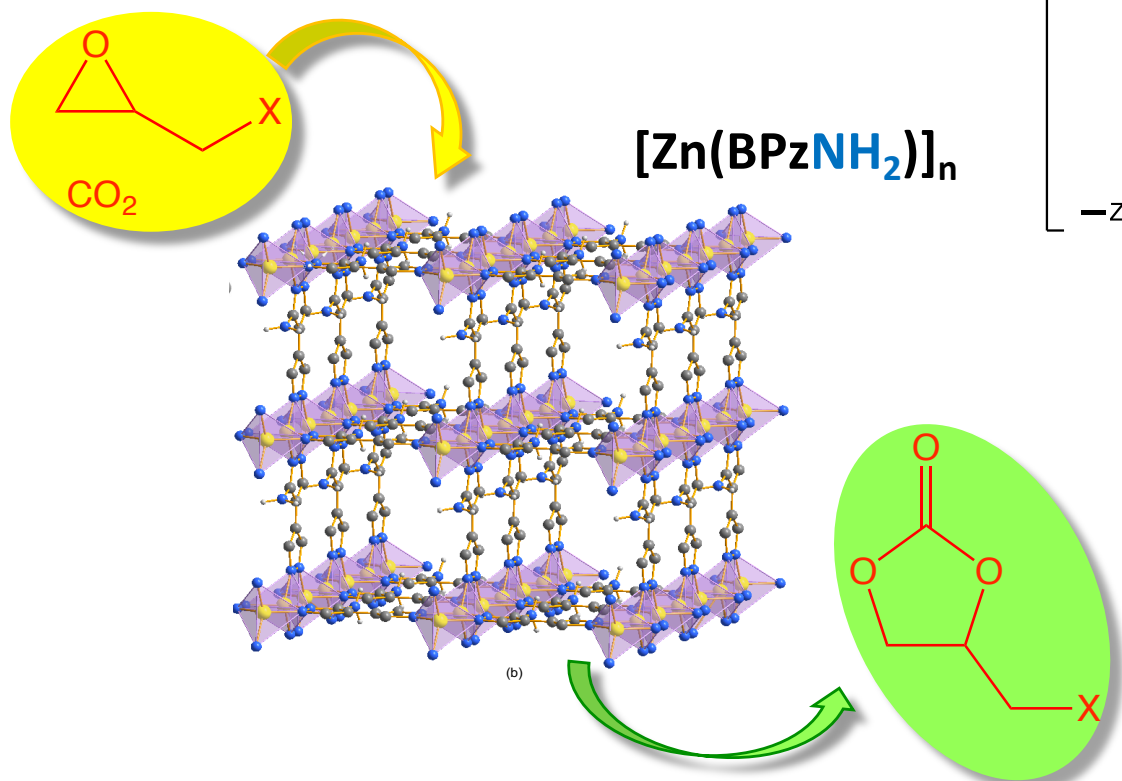
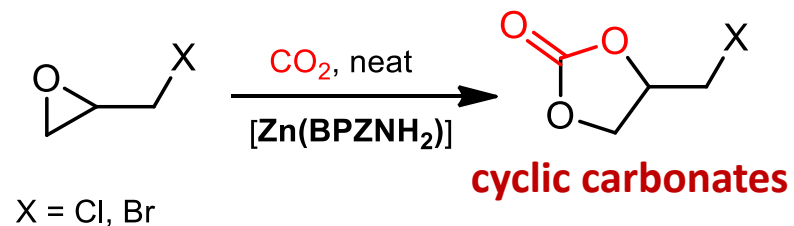


Host-guest interactions



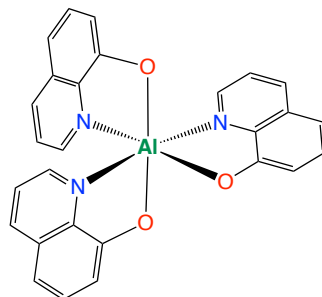
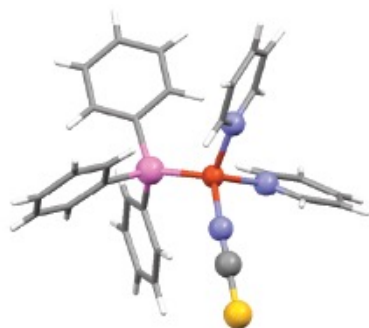
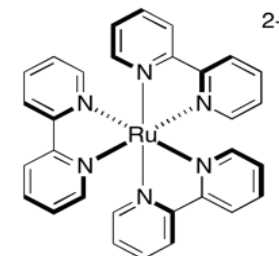
New pirazolate-based MOFs

CO₂ capture and conversion

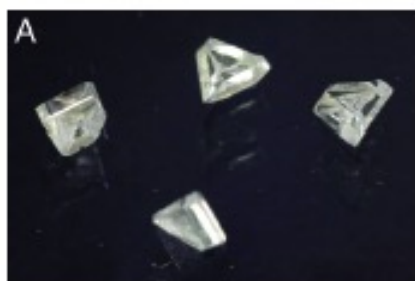


New luminescent materials

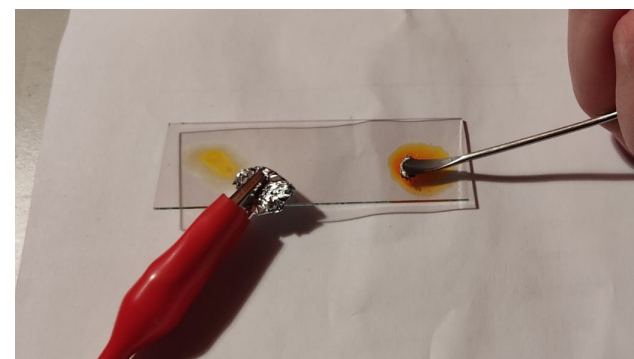
Triboluminescence



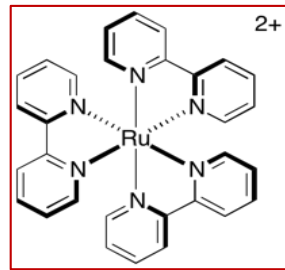
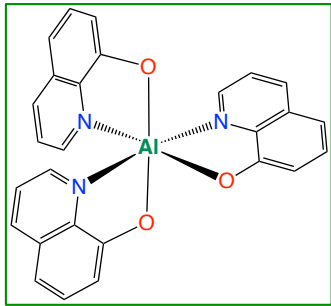
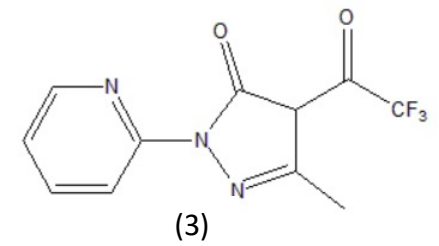
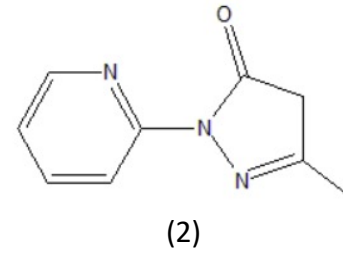
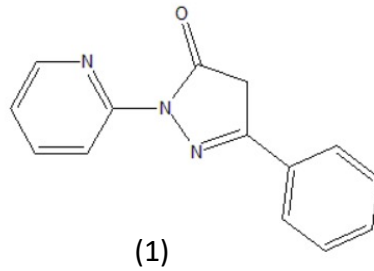
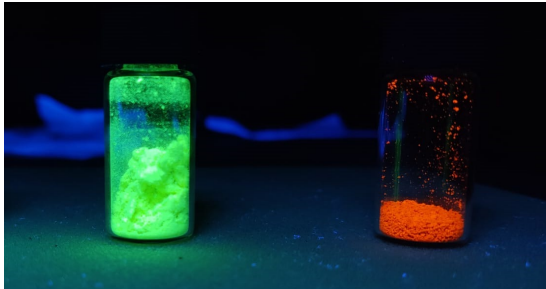
Photoluminescence



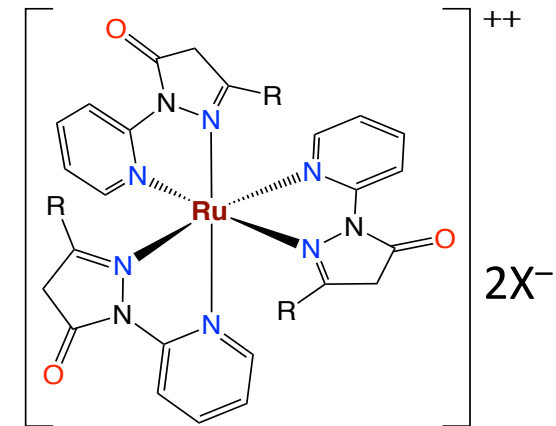
Electroluminescence



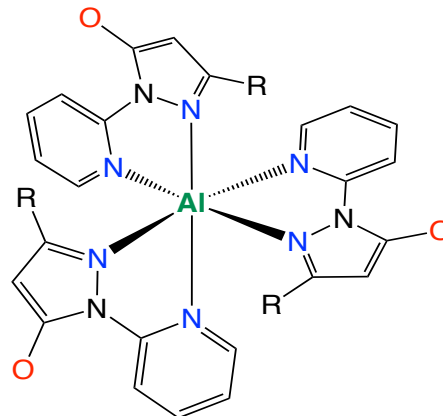
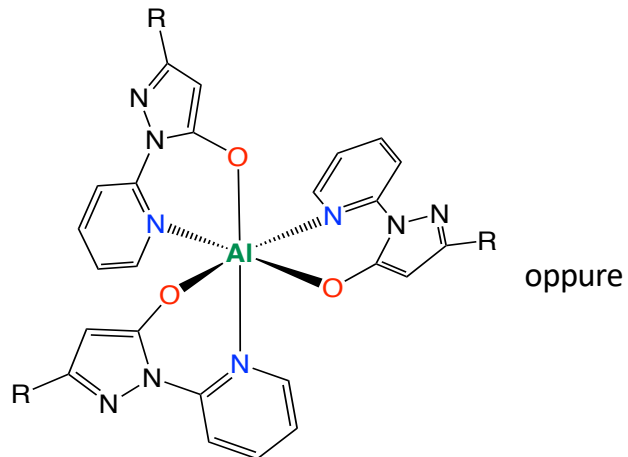
New luminescent materials



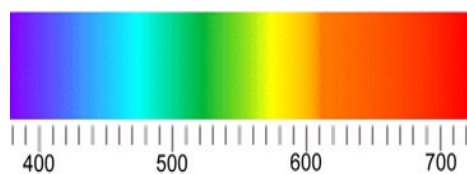
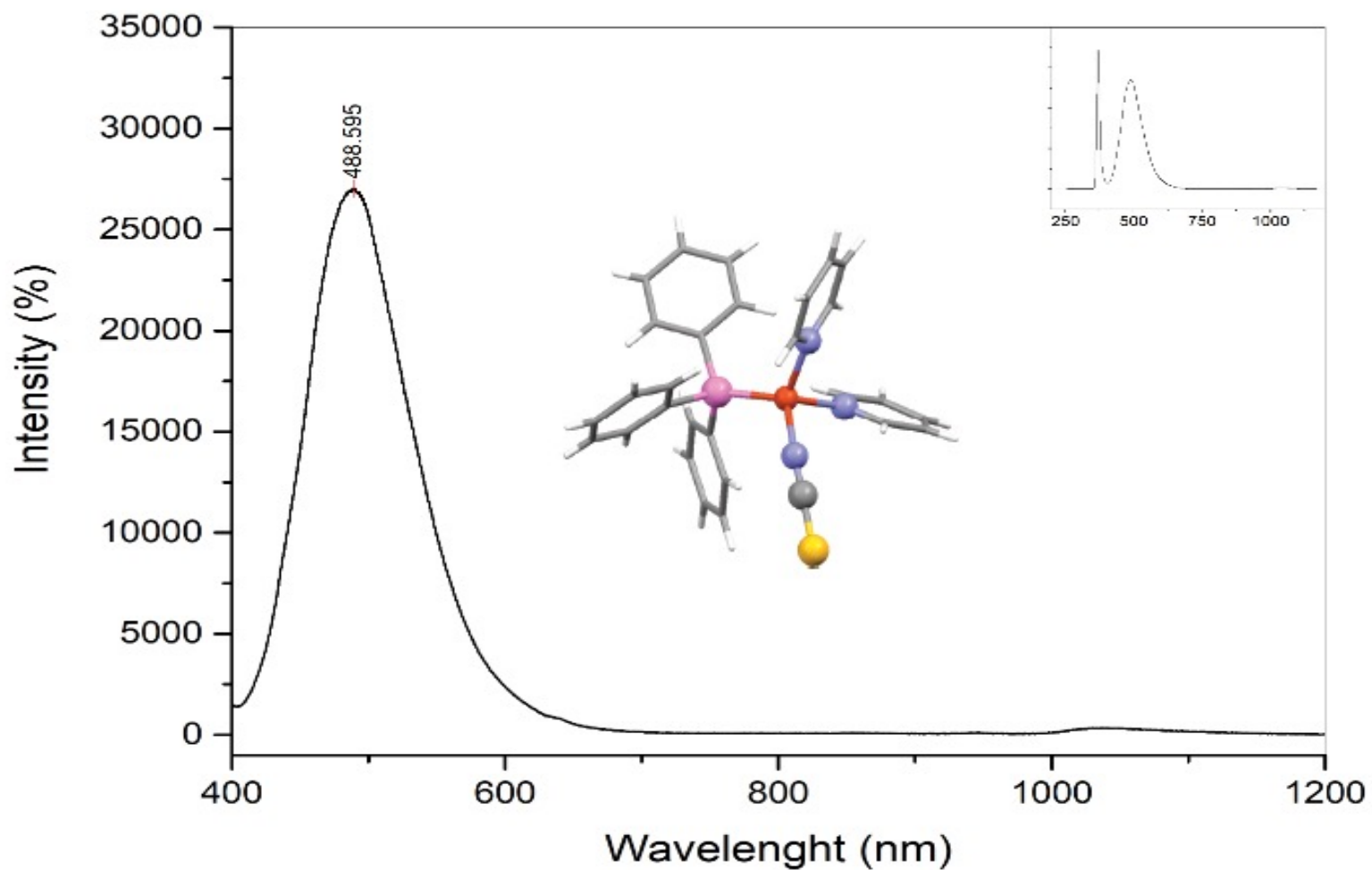
Potentially electroluminescent
Rutenium compounds



Potentially electroluminescent Aluminum compounds



New luminescent materials



New luminescent materials

Triboluminescence

