

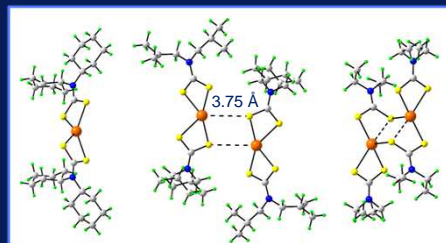
Supramolecular Assembly Based on  
Emerging Intermolecular Interactions of  
Particular Interest to Coordination Chemists

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Steric effects and secondary bonding



" $\text{Hg}(\text{S}_2\text{CNR}_2)_2$ "  
Sum of the van der Waals radii for Hg and S = 3.35 Å

Molecular packing

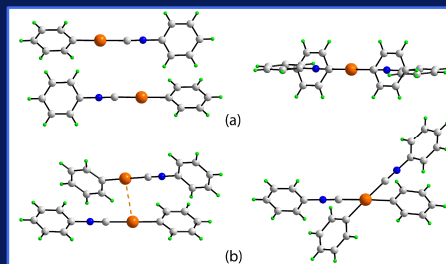
Well known...

Hydrogen bonding  
Halogen bonding

"Emerging"

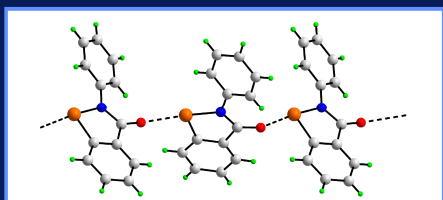
Secondary bonding  
M...M interactions  
M...H interactions  
Interactions involving chelate rings

Aurophilic (Au-Au) interactions



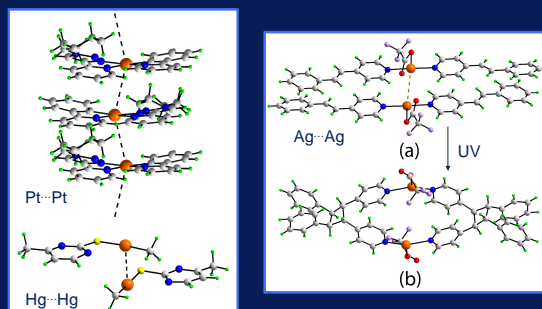
Polymorphs of  $\text{PhAuC}\equiv\text{NPh}$   
(a) to (b) Touch of a needle / mechanical grinding

Tetrel, Pnictogen and Chalcogen  
Secondary Bonding

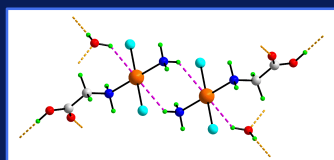


Se...O in Ebselen®  
polar gap,  $\sigma$ -hole; ~8 kcal/mol

Heterometallophilic (M-M') interactions

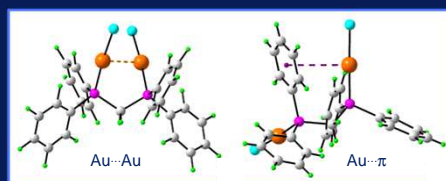


### Metal...hydrogen interactions as supramolecular synthons



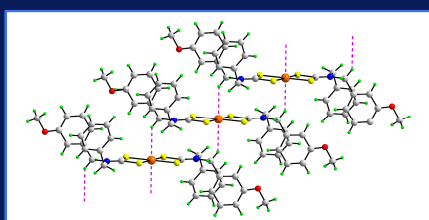
Pt...H-N and Pt...H-O hydrogen bonding  
in trans-[PtCl<sub>2</sub>(NH<sub>3</sub>)(N-glycine)]

### Au...π(arene) interactions



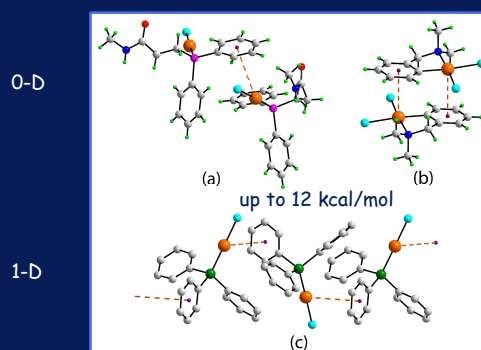
Polymorphs of (Ph<sub>2</sub>PCH<sub>2</sub>PPh<sub>2</sub>)(AuCl)<sub>2</sub>

### Metal...hydrogen interactions as supramolecular synthons

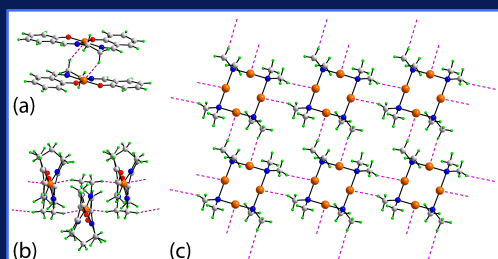


Ni...H interactions in Ni(S<sub>2</sub>CNRR')<sub>2</sub>

### Intermolecular Au...π(arene) interactions

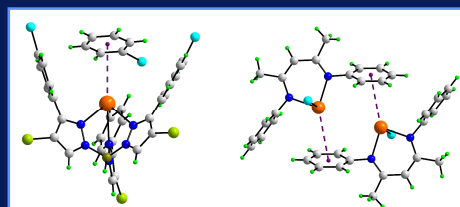


### Metal...hydrogen interactions as supramolecular synthons

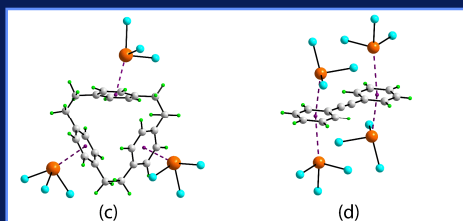


Architectures sustained by {...HCNM}<sub>2</sub> synthons

### Intermolecular M(lp)...π(arene) interactions

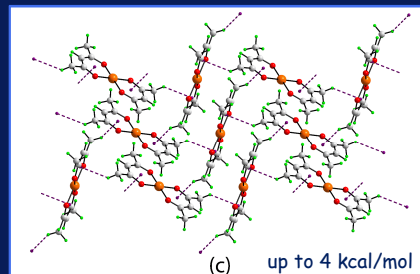


### Intermolecular $M(lp) \cdots \pi(\text{arene})$ interactions

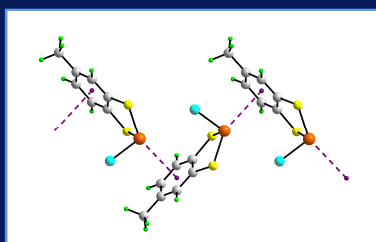


up to 10 kcal/mol

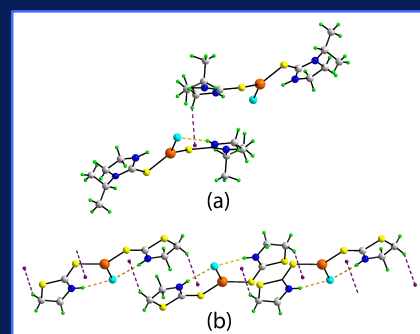
### Intermolecular interactions involving chelate rings



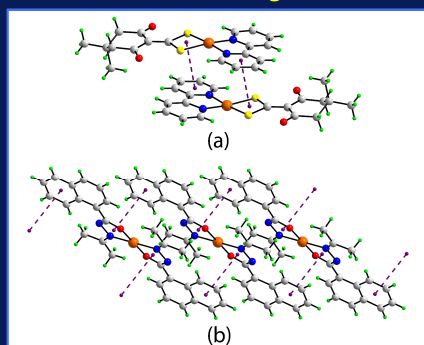
### Intermolecular $M(lp) \cdots \pi(\text{arene})$ interactions



### Intermolecular interactions involving quasi-chelate rings



### Intermolecular interactions involving chelate rings



### Conclusions

More than hydrogen bonding

Energies of "emerging" interactions similar

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Fortuna Eruditis Favet ("Fortune favours the prepared mind")