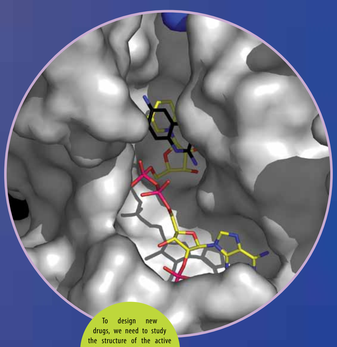
Crystals and pharmaceuticals

A single molecule can crystallise under different forms while presenting the same chemical characteristics in solution. This is polymorphism, which plays a significant role in the effectiveness of medicines.



To design new drugs, we need to study the structure of the active molecules to be able to «see» the key sites involved in the overall process.
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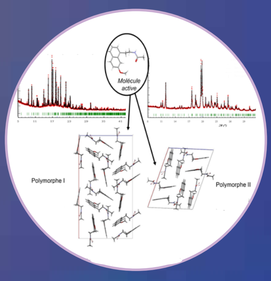
Medicines are generally administered orally and are usually in solid powder form. The active molecule responsible for the medicinal effect is wrapped in a complex mixture of support materials. Together they become more or less crystallised. The polymorphism which results from the different arrangement of molecules generates different forms of crystallisation. é cristaux.

It is important to **control the shape and size of the crystals** containing the active medicinal molecule, as these parameters may influence the speed at which the molecule dissolves and thus the effectiveness of the medicine.



The polymorphism of asparagine

The polymorphism of crystals can give them properties of particular pharmacological interest:
- Variations in the distribution of the faces of a crystal: during the growth of the ***L-asparagine*** crystal, for example, the solvent influences the formation of a polymorph and specific shapes by fitting onto one side of the assembly without interrupting the growth of the crystal's molecules
- Different densities and porosities can have implications for the formation of the drug
- Different solubilities and dissolution rates can influence the bioavailability of the drug, with an impact on its efficiency (under-dosing) or toxicity (over-dosing).

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