# ExPaNDS and PaNOSC Techniques

**Explanation**

The ‘experimental techniques’ spreadsheet shows a proposed local structure for constructing PaN techniques from intersections of component classes (phenomena).

There are five ‘top level’ classes so far: probe, [physical]phenomenon, vesus/functional dependence, purpose and sampleForm. These are selected to be as ‘orthogonal’ as possible, e.g. there is as little as possible in ‘versus’ that is specific to a ‘probe’ type. (Note that complete orthogonality is probably impossible). These classes are therefore seen as the ‘building blocks’ of the techniques.

Each class has a tree of subclasses (subsets); every instance of a subclass is also an instance of the parent superclass.

Specific techniques are then constructed from intersections (‘AND’) of various subclasses.

As an example, a list of PaNOSC techniques have been mapped onto the classes (‘PaNOSC techniques’ sheet in the spreadsheet).

This exercise applies to techniques only and not, for example, to science subject. Only terms that are of direct relevance to technique description should be included, although in some cases there is an unavoidable connection to the type of object under investigation.

The class structure (or taxonomy, terms sets…) can be utilized for tagging and searching. For example, an item tagged with ‘phenomenon:scattering:…:diffraction’ should be found from a search of a superclass such as ‘phenomenon:scattering’.

The nature of the subclasses is not formalized in this taxonomy. However, ExPaNDS PaN ontology WP3.2 will create an OWL ontology within which the subclasses are defined by property relationships. The ontology will also provide PIDs for the terms and facilitate annotation and key references for experimental methodologies, along with ‘preferred’ and ‘alternative’ names, mapping to NeXus names etc. It will provide rudimentary semantic definitions for humans and machines.

Our goal is to have agreement on the structure of the taxonomy, names to be used etc by the end of 2020 in order to work on the ontology in the new year.

**Caveats and comments**

This illustration is for discussion purposes. All names are placeholders. It is incomplete.

The examples in ‘PaNOSC techniques’ are slightly inconsistent due to the evolution of the classes between the start and end of the exercise. Hopefully it is clear enough to understand intent.

**Request for feedback and comments**

Please comment on this proposed structure by 31st October 2020.

Please comment on essential missing concepts.

Please comment particularly on techniques or concepts that do not appear to be naturally incorporated into the proposed structure.

Please give us references for any sets of terms/names that must be included in the taxonomy, along with any that you think we should know about.

Specific questions:

* We have adopted ‘low-Q’ rather than ‘small angle’ as this is less dependent on wavelength. Is this approach sensible?
* We have added qualifications to independent variables under ‘versus’ (functional dependence). Is this OK?