# 332: Properties of S10 Material Substantial of CRMsci

TV presented his HW

1. scope note and examples for S24 Sample Splitting
2. redrafted scope note for S27 split (was source for) to reflect change in the domain
3. definition of O29 removed sub-sample(was removed by)

**Decision**: Proposed changes accepted. Details for [S24](#_S24_Sample_Splitting), [O27](#_O27_split_(was) and [O29](#_New_property:_O29).

## S24 Sample Splitting

Subclass of: S2 Sample Taking

Scope note: This class comprises the activity of dividing an instance of S13 Sample into new instances of S13 Sample. This activity describes cases of sub-sampling where the resulting instance maintains the characteristic qualities of the original instance. Any observations of these qualities made on the new instance also apply to the original one. This class should be used to model cases of splitting a homogenous sample into multiple ones.

Examples:

* the activity of removing a part from the sample, which was originally taken from the tusk fragment GT993 by Godfrey et al. in 2000, in order to analyse it through ICP-AES analysis to reveal the composition of the original sample   
  [A sample from a section of the tusk fragment GT993 which was originally found in the ship-wreck of Vergulde Draeck in Western Australia was taken. This sample was homogenous (ground to fine powder). Part of the sample was then removed for elemental analysis using inductively coupled plasma atomic emission spectrometry (ICP-AES). Another part was removed for carbon/nitrogen analysis using a LECO analyser.] (Godfrey et al., 2002)

In First Order Logic:

S24(x) ⇒ S2(x)

Properties:

O27 split (was source for): S13 Sample

O29 removed sub-sample (was sub-sample removed by): S13 Sample

## O27 split (was source for)

The definition changed

### FROM (old):

**O27 split (was split by)**

Domain: S24 Sample Splitting

Range: S13 Sample

Subproperty of: S2 Sample Taking: O5 removed (was removed by): S13 Sample

Quantification:

Scope note: This property associates an instance of S2 Sample Taking with an instance of S13 Sample that was removed during this activity. The resulting S13 Sample maintains the characteristic qualities of the instance of S10 Material Substantial that the sample was taken from. This supports reasoning that this sample retains/preserves the characteristic qualities of the original sample. This property should be used to model cases when a homogenous sample is split into multiple ones.

Examples:

### TO (new):

**O27 split (was source for)**

Domain: S24 Sample Splitting

Range: S13 Sample

Subproperty of: S2 Sample Taking. O3 sampled from (was sample by): S10 Material Substantial

Quantification: many to many (0,n:0,n)

Scope note: This property associates an instance of S24 Sample Splitting with the instance of S13 Sample which is the original sample being split.

Examples:

* The subsampling activity by Godfrey et al. in 2000 (S24) *split* the homogenous sample (S13). [Part of the finely ground sample from fragment GT993 was taken to be used in ICP-AES analysis.] (Godfrey et al., 2002)

In First Order Logic:

O27(x,y) ⇒ S24(x)

O27(x,y) ⇒ S13(y)

## New property: O29 removed sub-sample (was sub-sample removed by)

Domain: S24 Sample Splitting

Range: S13 Sample

Subproperty of: S2 Sample Taking. O5 removed (was removed by): S13 Sample

Quantification: many to many (0,n:0,n)

Scope note: This property associates an instance of S24 Sample Splitting with the resulting instance of S13 Sample that has been removed from the original sample. The new sample (i.e. the sub-sample) maintains the characteristic qualities of the original.

Examples:

* The subsampling activity by Godfrey et al. in 2000 (S24) *removed sub-sample* the ICP-AES sub-sample (S13). [This sub-sample was used for elemental analysis using inductively coupled plasma atomic emission spectrometry (ICP-AES) to reveal the composition of the original sample.] (Godfrey et al., 2002)

In First Order Logic:

O29(x,y) ⇒ S24(x)

O29(x,y) ⇒ S13(y)