**Type of experiment**: Nanoindentation

**Author(s)**: Muhammad Zubair, James Gibson, Martina Freund, Wassilios Delis, Uzair Rehman

**Comments:** Metadata template for nanoindentation experiments.

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*PLEASE DO NOT CHANGE THIS – USE COMENTS TO INCUDE MORE INFO!*

**Legend:**

**Bold** shows the metadata to be included

(brackets) show what type of value is associated, e.g. ‘string’ *“this is a string”*, int *5*, float *3.33*, or fixed set of options *[“red”, “blue”, “green”]*.

*Italic* font shows the example user input

Light blue highlights meta data to be included in a CoScInE mask for new ressources

Light green highlights meta data that is important but is preserved in other files for now and could later be captured automatically (please still include here explicitly!)

Light yellow highlights meta data that may be inserted as part of another experiment (here = “metallographic preparation” or might be better to keep with the imaging records – t.b.d.

Light grey that this meta data is not essential but might be good include (please do include here whatever meta data you can think of for now!

Please define all but the most trivial of acronyms!

You can provide structure to your metadata by including a **[descriptive header]** and then including sub-pieces of metadata tab-indented.

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**Operator** (string)

*Muhammad Zubair*

**Experiment ID** (string)

*NI\_001*

**[Sample information]**

**Specimen ID** (string)

*B1S1\_M*

**Parent sample specimen ID**(string)

*C02, composite sample, 2020.08.10 (receiving date)*

**Sample location** (string)

*Longitudinal cross-section*

*from top surface*

**[Sample preparation]**

**Preparation routine** (string)

*Metallo\_C02*

[this might include (here or leaded from “Metallo\_C02\_B1S1\_M

**Polishing paper** (multiple int)

*2000, 4000*

**Grit material** *(“SiC”, “Al2O3”)*

*SiC*

**Suspensions [µm]** (multiple int)

*3, 1*

**Material suspension** (“diamond”, *“Al2O3*”)

*Diamond*

**Solvent** (“isopropanol”, ethanol”, “water”, “oil”)

*Ethanol*

**Electro-polishing**

**Etchant**

AC-II (Struers)

**Parameters**

(-20°C, 15V, 60s)

**Fine Polishing (this step may be repeated if sample is to utilized later)**

OPU (colloidal suspension of ~40nm SiO2)

**Date of preparation** (date)

21.08.2020

16.09.2020 (Fine polishing again)

**Sample storage** (“air”, “dessicator”, “high vacuum”, “protective gas – Ar”,”…”)

*Vacuum Dessicator*

**[Orientation Information]**

**Sample Orientation** (string)

*Grain 1: [-2 1 3 0]*

*Grain 2: [1 2 -3 4]*

**Instrument used** (string)

*I-Nano / IMM*

**Tip used** (“Berkovich”, “Flat punch”, “Conical”,….)

*Berkovich*

**Comments** (string)

*Indents array (8 \* 8)*

**[This is per indent (to be extracted automatically) from data file itself/meta data where available]**

**Type of test [“constant strain rate, CSR”, “strain rate jump, SRJ”, “micro-pillar compression, MPC”, “fracture toughness, FT”]** (string)

*CSR*

**Tip [ID]** (string)

*C0041496*

**Diamond area function (DAF)** (date of calibration) (floats)

*Area Terms: 5*

*Term 0: 10.5*

*Term 1: 17757.4*

*Term 2: -409270.8*

*Term3: 1464128.3*

*Term4: -1115475.24*

**Date of Calibration** (string)

*(21.09.2020, 08:58)*

**Frame Stiffness [N/m]** (float)

*1.84 x 105*

**Target load [mN]** (float)

*Depth controlled*

**Target Depth [nm]** (float)

*1000nm*

**Target Strain Rate [/s]** (float)

0.2/s

**Continuous Stiffness measurement** (“Yes” or “No”)

*Yes*

**Start of Averaging Depth [nm]** (float)

*300*

**End of Averaging Depth [nm]** (float)

*500*

**Drift Correction Enabled** (“Yes” or “No”)

*Yes*

**Sample Temperature [˚C]** (float)

*25*

**Tip Temperature [˚C]** (float)

*25*

**[Data Environment as an example of non-standard but useful records]**

**Relative Humidity {%]** (float)

*70*

**Environmental protection during specimen testing** (string)

*none*

**Environmental gas** (string)

*Air*

Test date

22.09.2020