**Data and Metadata of PLD process at Universität Leipzig**

(machine/sensor-based and manually entered data)

1. **General information**

* Sample ID
* Deposition date
* Grower
* Recipient of sample (person that ordered the sample)

1. **Setup**

* Laser
  + Model
  + Total number of pulses since installation
  + Total number of pulses since gas refill
  + Total number of pulses since last service
* PLD Chamber
  + Model
  + Operation time or physical work of heating system
  + Operation time since last bake-out
  + Operation time since last service/reconfiguration

1. **Target-related data and metadata**

* Segmentation. Yes/No, if yes 🡪 specify segmentation (azimuthal #of pieces, radial shape)
* Fabrication
  + Composition of target or each segment
  + Source powders (vendor, purity)
  + Ball mill used
  + Pressure applied
  + Sintering temperature
  + Sintering time
  + Fabrication date
* Total number of pulses applied to the target  
  (number of pulses on each segment/each radial position, race track)

1. **Deposition Process**

* Substrate
  + Type (sapphire, glass, YSZ,…)
  + Size
  + Orientation
  + Miss-cut angle
  + Polishing (ds, ss)
  + Supplier and Charge number
* Pre-growth treatment
  + Annealing (temperature, atmosphere, time)
  + Plasma treatment (power, gas, time)
  + Wet chemical treatment (chemical, time, temperature)
  + Heating time and power of substrate prior to growth
  + Atmosphere and pressure for heating
* Growth
  + Layer data
    - Size of laser aperture
    - Position of focusing lens
    - Target-to-substrate distance
    - Lateral offset e between center of plasma plume and substrate center
    - Heating power
    - Growth temperature
    - Time growth temperature was stable prior to first pulse
    - Growth pressure
    - Composition of ambient gas
    - Laser energy
    - Number of laser pulses
    - Laser frequency
  + Steps prior, in between and after layer growth
    - Heating power
    - Temperature
    - Pressure
    - Composition of ambient gas
* Post-growth treatment
  + Atmosphere and pressure during cool-down
  + Heating steps during cool-down
  + Post-growth annealing (temperature, atmosphere, time)

Schematic representation of the data and metadata structure

