BT = Broader Term

NT = Narrower Term (similar to SubClass\_of)

1. **IV Measurement (BT Assay/Measurement)**

*Input:* Device (IV Measurement is a process that might be used for different types of devices than solar cells (e.g., Diode, Resistances))

*Instrument Configurations:* Sourcemeter

*Settings:* scan rate (V/s), integration time (ms), settling time (ms), compliance (mA/cm^2), scan direction, starting voltage/stop voltage, voltage step size, Temperature

*Measurement:* active area (cm^2), current (A)  
*Output:* Tabular data, 2 columns: voltage (V), or current\_density (A/cm^2)

*Data processing:* JV analysis

*Derived quantities:* (device dependent)

*Note:*

1. **Illuminated IV Measurement (BT IV Meaurement)**

*Input:* PV Device, reference cell

*Instrument Configurations:* Light Source, Filter, , Illuminated Area

*Settings:* light intensity (mW/cm^2), Lightspectrum

*Output:*

*Data processing:* JV analysis

*Derived quantities:* Solar cell efficiency (nd), open circuit voltage (V), short circuit current density (A/cm^2), fill factor (nd), potential at MMP (V), current density at MPP (mA/cm^2), series resistance (Omega\*cm^2), shunt resistance (Omega\*cm^2).

1. **EQE Measurement**

*Input:* solar cell, reference cell

*Instrument Configuration:* Light source configuration, bias light source configuration, monochrometised light source configuration (might be a specific term), current-voltage amplifier configuration, Lock-in amplifier configuration (+integration time)

*Settings:* light bias (mW/cm^2), Monochrometised Light (Step size), chopper frequency, voltage bias, Filter (wavelength), scanning frequency/rate (wavelength/s)(of the light source)  
*Output:* Tabular data, 2 columns: photon energy (eV) or photon wavelength (nm), | Voltage (postprocessing needed) |

*Data processing:* EQE Analysis

*Derived quantities:* EQE Bandgap (eV), integrated jsc (mA/cm^2), integrated j0rad (mA/cm^2), voc rad (V), urbach energy (eV), urbach energy fit standard deviation (eV), external quantum efficiency in % (by sample measurement + reference/calibration measurement)

*Notes:* IEC Standard (IEC 60904-8:2014)

1. **MPP Tracking (Maximum Power Point)**

*Input:* Light source, Source measure unit

*Instrument Calibration:*

*Settings:* time,

*Derived Output:* Power Conversion Efficiency (MPP Voltage\*MPP Current)

*Note: Special case of JV Measurement*

1. **Annealing**

*Input:* Sample/Substrate,   
*Settings:* Heating device-Temperature (°C), time (s), atmosphere [‘Pressure’, ‘Temperature’, ‘oxygen’, ‘nitrogen’, ‘humidity’, ’gases’], Time-Temperature Profile(Steps, Ramps, Dwelling time)  
*Process information:*   
*Output:* Sample/Substrate

(Reactive Annealing (BT Annealing))

1. **Spin Coating**  
   *Input:* Sample/Substrate, Atmosphere, (Spin coating recipe), Anti solvent, precursor ink  
   *Settings:* anti solvent dropping time (s), solution volume (ml), anti solvent volume (ml), Time-RPM Profile (Speed (rpm), acceleration (rpm/s) and duration (s) on spin coater), “Time-Dispensing Profile” (Timeline with Events (Droppings))  
   *Process information:*

*Derived Output:*  
*Output:* Layer with functional role

1. **Sputter Deposition**

Input: Substrate

Instrument Configuration: Target Rotation

Settings: Substrate Rotation (Yes/No, Speed), Target Temperature,

Substrate-Target-Distance, Sputtering gas flow/power

Process Information:

Derived output:

1. **Zusatz**
   1. Calibration Step/Measurement: a calibration measurement using a reference cell
   2. Quenching can occur during different manufacturing processes (e.g. Spin coating), the usage of an anti-solvent indicates a quenching process (needs check)
   3. Spray Pyrolysis = Spray coating with heated sample (Eva)
   4. Light Source als Klasse -> SubClass monochromatic light, Filter
   5. *Scan rate* relevant for linear sweep voltammetry, not for staircase voltammetry (both being used) (Eva)
   6. Include Stability measurements in the Ontology