

## 3D Microscopy Metadata Standards (3D-MMS)

### Instrument Category

The Instrument category includes 12 metadata fields that describe the instrument.

| Field Name                     | Definition   | Allowable Values | Occurrence | Required for Brain Image Library Submission | Supports Digital Object Identifier (DOI) | DataCite (ID: Property) | OME (Element: Attribute)  |
|--------------------------------|--|------------------|------------|---|--|-------------------------|---|
| microscopeType                 | Type of microscope used to capture the image (e.g., inverted, upright, light sheet, confocal, two photon).       | Free text        | 1          | Yes   | No                                       | None                    | <a href="#">Microscope: Type</a>  |
| microscopeManufacturerAndModel | Manufacturer and model of the microscope used.   | Free text        | 1          | Yes   | No                                       | None                    | <a href="#">Microscope: Manufacturer</a><br><a href="#">Microscope: Model</a> |
| objectiveManufacturerAndModel  | Manufacturer and model of the lens used.   | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Objective: Manufacturer</a><br><a href="#">Objective: Model</a>   |
| objectiveImmersion             | Immersion medium for the lens. Suggested values: Air, Glycerol, Multi, Oil, Water, Water dipping.                | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Objective: Immersion</a>  |
| objectiveNA                    | Lens numerical aperture.   | Number           | 0-1        | No  | No                                       | None                    | <a href="#">Objective: LensNA</a>   |
| objectiveMagnification         | Lens magnification.  | Number           | 0-1        | No  | No                                       | None                    | <a href="#">Objective: NominalMagnification</a>                               |
| detectorType                   | Type of detector used. Suggested values: CCD, Intensified CCD, Analog video, PMT, Photodiode, CMOS, EBCCD, FTIR, | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Detector: Type</a>  |

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|------------------------------|--|------------------|------------|---|--|-------------------------|--|
|                              | spectroscopy, Lifetime imaging, Correlation spectroscopy, EMCCD, APD, etc.                                     |                  |            |   |  |                         |  |
| detectorManufacturerAndModel | Manufacturer and model of the detector.  | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Detector: Model</a><br><a href="#">Detector: Manufacturer</a>                              |
| illuminationType             | Type of illumination. Suggested values: Gas, Metal vapor, Solid state, Dye, Semiconductor, Free electron, etc. | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Laser: Type</a>  |
| illuminationWavelength       | Bandwidth of illumination light.   | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">Laser: Wavelength</a><br><a href="#">Laser: WavelengthUnit</a>                             |
| detectionWavelength          | Bandwidth of collected light.  | Free text        | 0-1        | No  | No                                       | None                    | None   |
| sampleTemperature            | Sample temperature at capture.   | Free text        | 0-1        | No  | No                                       | None                    | <a href="#">ImagingEnvironment: Temperature</a><br><a href="#">ImagingEnvironment: TemperatureUnit</a> |

#### Occurrence

0-n = optional and repeatable

0-1 = optional, but not repeatable

1-n = required and repeatable

1 = required, but not repeatable