Acquisition of meta-data to accompany zircon ages

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The following method specific details are requested of participants:

(i) Isotope Dilution (ID)

— Which type of instrument did you use? (options)
- TIMS
- ICP-MS single-collector
- ICP-MS multi-collector

— Which spike did you use? (options)
- EarthTime 535 spike
- EarthTime 2535 spike
- In house spike calibrated against EarthTime solution
- In house mixed spike calibrated using in house materials
- In house single spikes
- Other

— Did you mechanically abrade your test portions (yes/no)?

— Did you chemically abrade your test portions (yes/no)?

— What range of masses of test portions did you use?
from ___ mg to ___ mg

— What range in 206/204 did you observe?
from ___ min to ___ max

— How many hours did you use for digesting this material?___ hours

— What temperature did you use for digesting this material? ___ °C

— What acid did you use to digest the test portions? (options)
- Pure concentrated HF
- Concentrated HF admixed with HNO3
- Other

— Did you correct for thorium disequilibrium? (yes/no)

— What $^{238}U/^{235}U$ ratio did you apply? ___

— What ^{238}U decay constant did you use? ___ y^{-1}

— What ^{235}U decay constant did you use? ___ y^{-1}

— Which data reduction package did you use? (options)
- EarthTime REDUX
- Schmitz and Schoene (2006) Excel worksheet
- In house data reduction software
- Other

— Are your reported ages based on simple or weighted means? (options)
- Simple mean
- Weighted mean

(ii) Secondary Ion Mass Spectrometry (SIMS)

— Which type of instrument did you use? (options)
- SHRIMP
- Cameca 1270/1280/1300
- NanoSIMS 50/50L
- Other

— What type of primary ion source did you use? (options)
- Duoplasmatron
- RF plasma source

— Type of primary species did you use? (options)
- $^{16}O^-$
- $^{16}O_2^-$
- Other

— Did you use oxygen flooding? (yes/no)

— Which primary mode did you use? (options)
- Kohler
- Gaussian
- Gaussian with raster

— What primary ion current did you use? (options)
- ≤ 2 nA
- > 2 to 5 nA
- > 5 to 10 nA
- > 10 to 15 nA
- > 15 nA

— What beam diameter did you use? (options)
- ≤ 2 μm
- > 2 to 10 μm
- > 10 to 20 μm
- > 20 to 30 μm
- > 30 μm

— Which calibration material did you use? (options)
91500
AS3
BB-zircon
BR266
FC-1
GJ-1
GZ7
GZ8
M127
M257
Monastery
Mud Tank
OG1
Plešovice
QGNG
Qinghu
SL-13
Temora2
Other

— What was the $^{206}Pb/^{238}U$ age that you assigned to your calibration material? ___ Ma

— What was the $^{206}Pb/^{238}U$ standard error of the mean on your calibration material? ___ Ma

— How many analyses were conducted on your calibration material? ___

— How many determinations on your calibration material were rejected as outliers? ___

— Which calibration scheme did you use? (options)
- 206/238 vs 270/238
- 206/238 vs 254/238
- 206/238 vs 270/254
- 206/254 vs 270/238
- 206/254 vs 254/238
- 206/254 vs 270/254
- Other

— Which curve fitting scheme did you use? (options)
- Linear
- Logarithmic
- Quadratic
- Power law
- Other

(iii) Laser Ablation ICP-MS – Sector field instruments (LA-ICP-MS: SFI)

— Which type of instrument did you use? (options)
- Multi-collector sector field
- Single collector sector field

— Please specify the make and model of the mass spectrometer that you used

— Which laser wavelength did you use? (options)
- Solid state 213 nm
- Excimer 193 nm
- Solid state 193 nm
- Other

— Which laser pulse length did you use? (options)
- Femtosecond
- Nanosecond
- Other

— Which laser fluence did you use? (options)
- ≤ 5 J cm^{-2}
- > 5 to 10 J cm^{-2}
- > 10 J cm^{-2}

— What laser spot diameter did you use? (options)
- ≤ 10 µm
- > 10 to 40 µm
- > 40 to 90 µm
- > 90 µm

— What sampling mode did you use? (drop-down)
- Spot
- Line, enter scan speed: ___ µm/s
- Raster, enter scan speed: ___ µm/s

— Which carrier gas did you use? (drop-down)
- Helium
- Argon
- Other

— Did you use a collision cell? (yes/no)

— Did you use a reaction cell? (yes/no)

— What laser repletion rate did you use? ___ Hz

— Did you use a signal smoothing device? (yes/no)

— Which calibration material did you use? (options)

- 91500
- AS3
- BB-zircon
- BR266
- FC-1
- GJ-1
- GZ7
- GZ8
- M127
- M257
- Monastery
- Mud Tank
- OG1
- Plešovice
- QGNG
- Qinghu
- SL-13
- Temora2
- Other

— What was the $^{206}Pb/^{238}U$ age that you assigned to your calibration material? ___ Ma

— What was the $^{206}Pb/^{238}U$ standard error of the mean on your calibration material? ___ Ma

— How many analyses were conducted on your calibration material? ___

— How many determinations on your calibration material were rejected as outliers? ___

(iv) Laser Ablation ICP-MS – Quadrupole and ToF instruments (LA-ICP-MS: Quad&ToF)

— Which type of instrument did you use? (options)

- Single quadrupole
- Triple quadrupole
- Time-of-Flight

— Please specify the make and model of the mass spectrometer that you used

— Which laser wavelength did you use? (options)

- Solid state 213 nm
- Excimer 193 nm
- Solid state 193 nm
- Other – specify

— Which laser pulse length did you use? (options)

- Femtosecond
- Nanosecond
- Other – specify

— Which laser fluence did you use? (options)

- ≤ 5 J cm^{-2}
- > 5 to 10 J cm^{-2}
- > 10 J cm^{-2}

— What laser spot diameter did you use? (options)

- ≤ 10 µm
- > 10 to 40 µm
- > 40 to 90 µm

- > 90 µm

— What sampling mode did you use? (options)
- Spot
- Line, enter scan speed: ___ µm/s
- Raster, enter scan speed: ___ µm/s

— Which carrier gas did you use? (options)
- Helium
- Argon
- Other

— Did you use a collision cell? (yes/no)

— Did you use a reaction cell? (yes/no)

— What laser repletion rate did you use? ___ Hz

— Did you use a signal smoothing device? (yes/no)

— Which calibration material did you use? (options)
- 91500
- AS3
- BB-zircon
- BR266
- FC-1
- GJ-1
- GZ7
- GZ8
- M127
- M257
- Monastery
- Mud Tank
- OG1
- Plešovice
- QGNG
- Qinghu
- SL-13
- Temora2
- Other

— What was the 206Pb/238U age that you assigned to your calibration material? ___ Ma

— What was the 206Pb/238U standard error of the mean on your calibration material? ___ Ma

— How many analyses were conducted on your calibration material? ___

— How many determinations on your calibration material were rejected as outliers? ___

(v) Other type of instrumentation / procedure

— Specify full details of procedure, including instrumentation, operating parameters, calibration details, etc. (free text)

Age Data Input

Required — Enter **mean $^{206}Pb/^{238}U$ age** ___ Ma and **uncertainty (1s)**: ± ___ Ma

Required — Enter **mean $^{207}Pb/^{206}Pb$ age** ___ Ma and **uncertainty (1s)**: ± ___ Ma

Optional — Enter **mean $^{208}Pb/^{232}Th$ age** ___ Ma and **uncertainty (1s)**: ± ___ Ma

Additional information

— How many total measurements were conducted on the test material? ___

— How many measurements on the test material were included in the final data pool? ___

— What was the total range (i.e. max. – min.) of $^{206}Pb/^{238}U$ ages in the final data pool? ___ Ma

— What common Pb correction did you apply? (options)

- ^{204}Pb corrected using composition appropriate for the age of test material (*204Pb ancient*)
- ^{204}Pb corrected using modern common Pb composition (*204Pb modern*)
- ^{208}Pb correction was applied (*208Pb*)
- Hybrid of lab blank plus ^{204}Pb correction using age of test material was applied (*204Pb hybrid*)
- No common Pb correction applied
- Other

— Do you have any observations concerning the behaviour of this test material that you wish to report? (free text box with up to 500 characters)