# Импактное преобразование циркона

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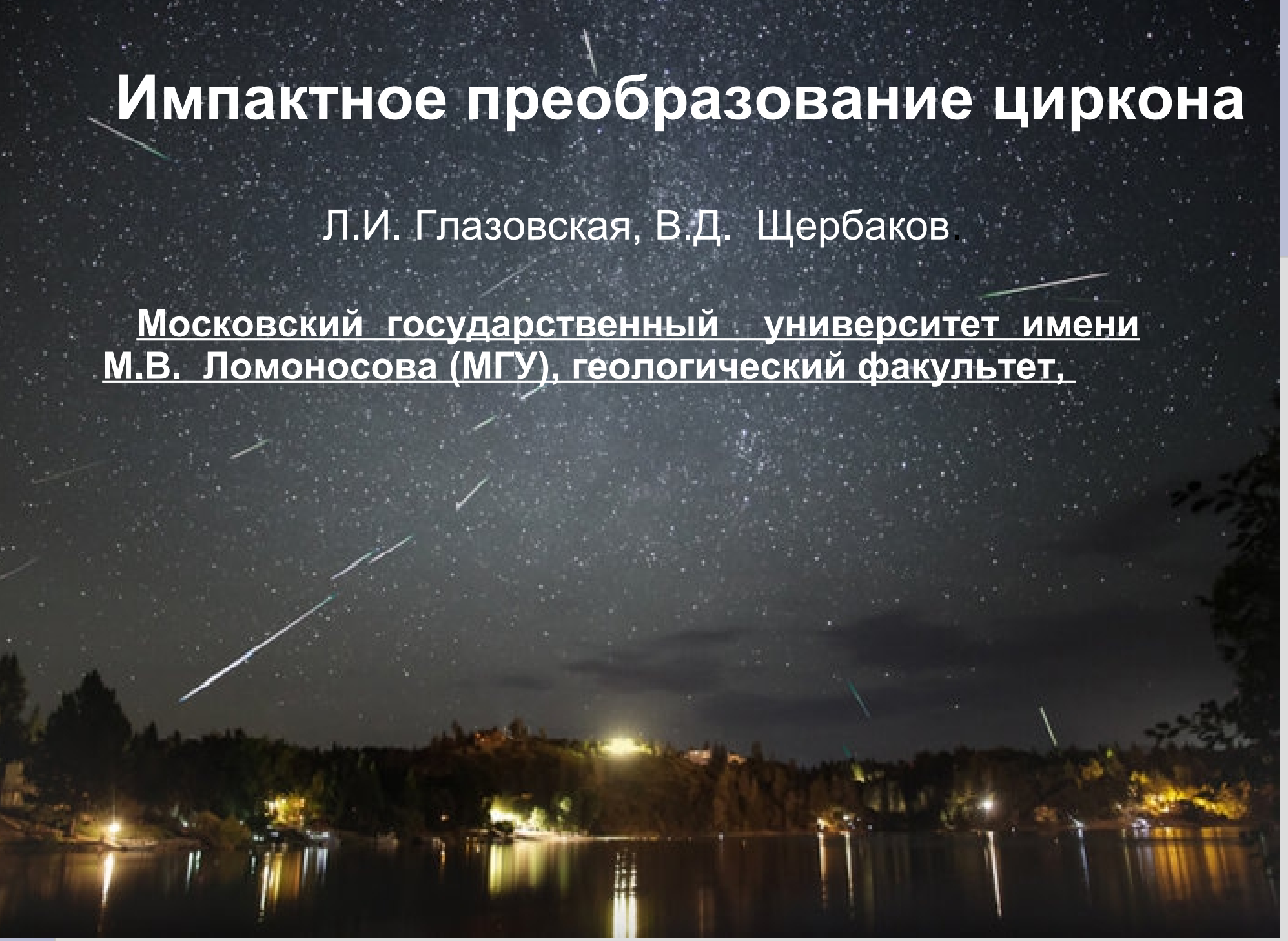
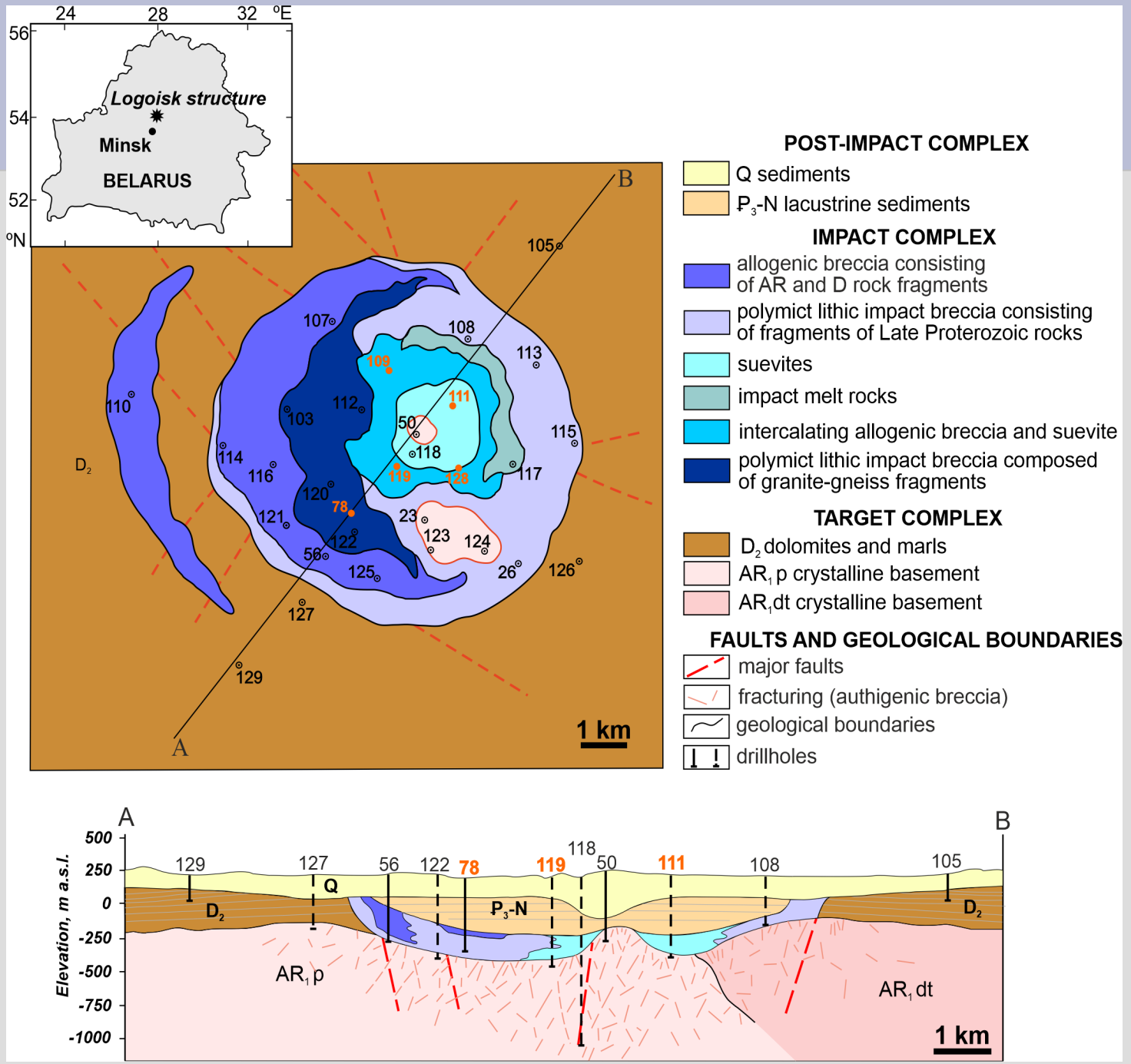
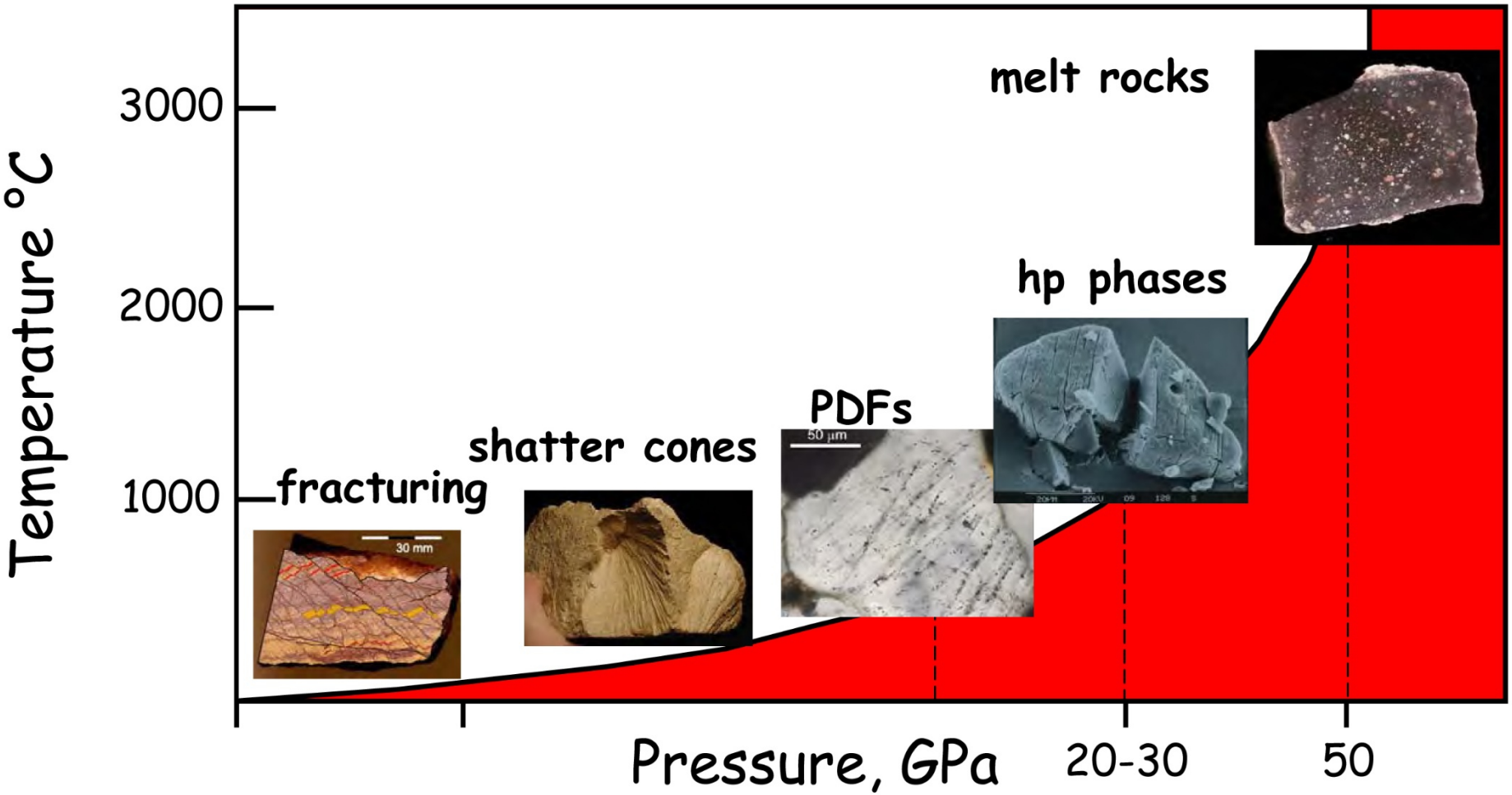


# Логойская структура (Белоруссия) Диаметр 17 км.

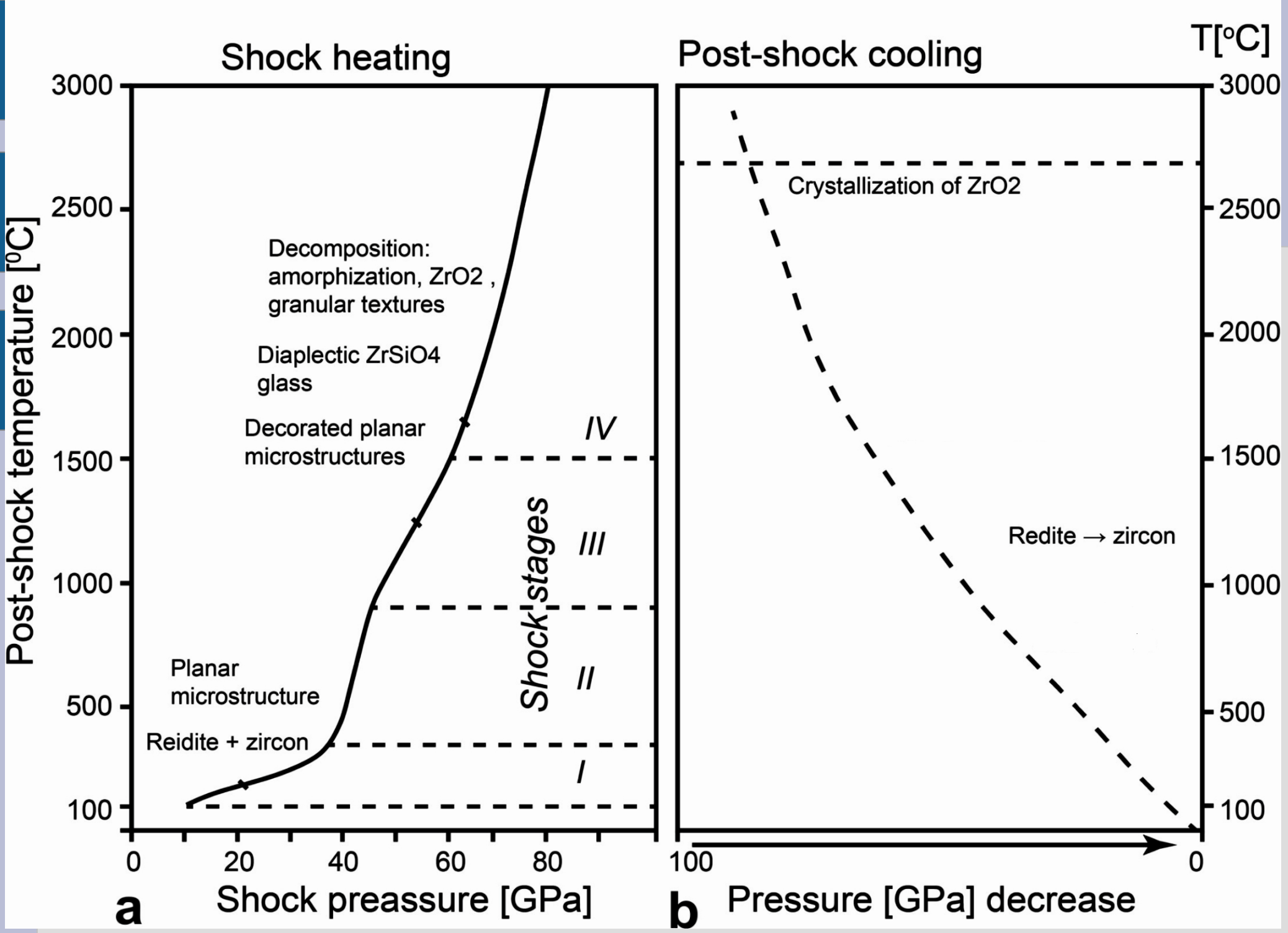


**Shock features in minerals/rocks tell us something about the thermodynamic conditions the material was exposed to**

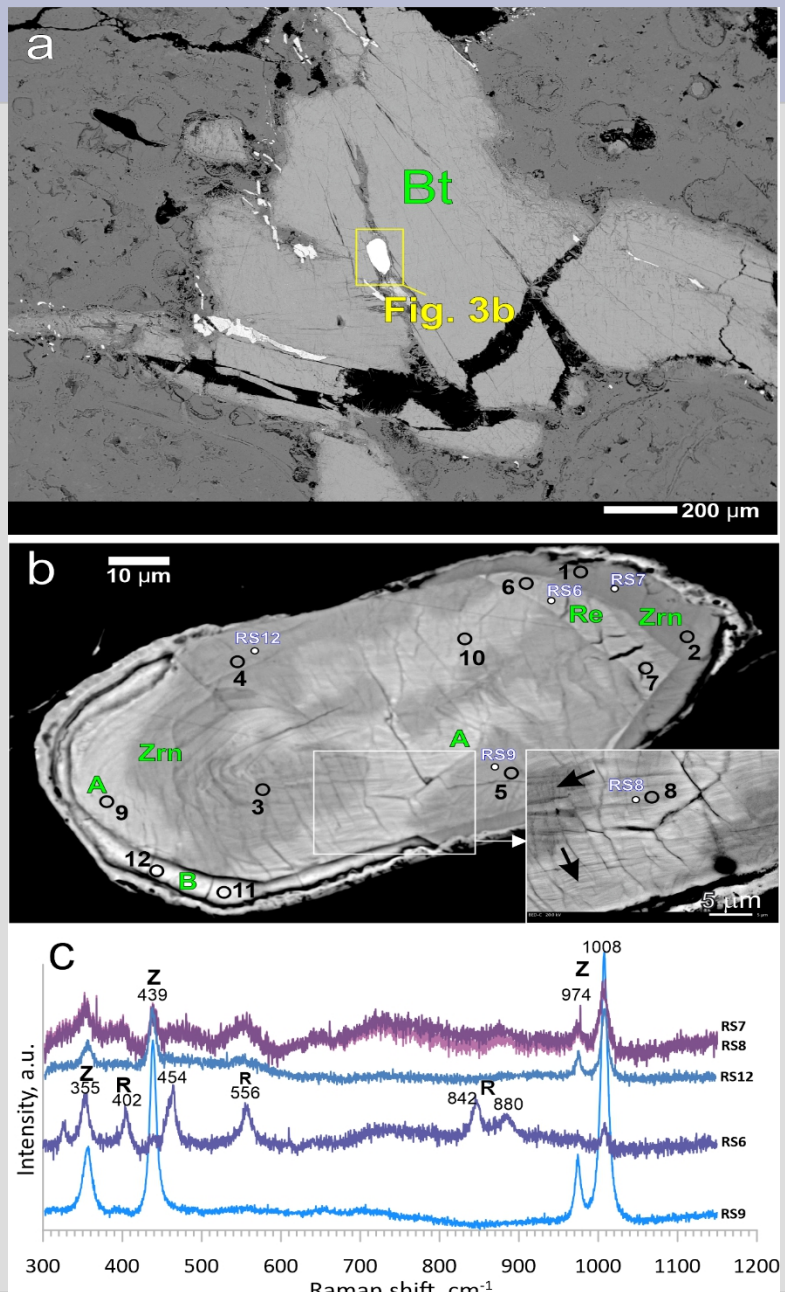



**most shock effects are well calibrated experimentally**

⇨ **we can use shock features for shock barometry in real craters**


Shock heating
Post-shock cooling
T[°C]
Post-shock temperature [°C]
3000
2500
2000
1500
1000
500
100
Decomposition:
amorphization, ZrO2 ,
granular textures
Diaplectic ZrSiO4
glass
Decorated planar
microstructures
IV
III
II
I
Shock stages
Planar
microstructure
Reidite + zircon
Crystallization of ZrO2
Redite → zircon
0
20
40
60
80
100
0
a
Shock preassure [GPa]
b
Pressure [GPa] decrease

# Преобразование циркона в импактном процессе



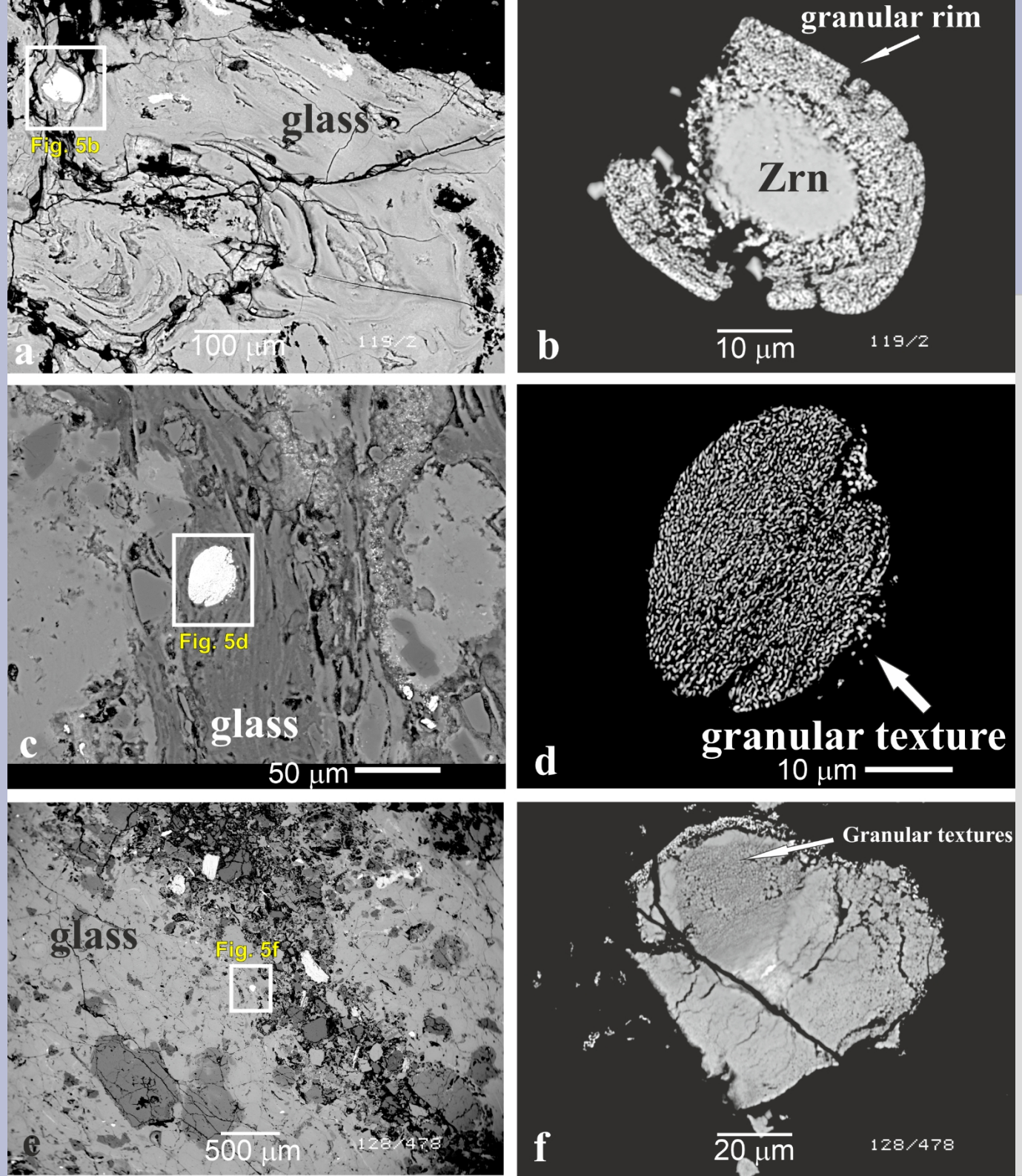
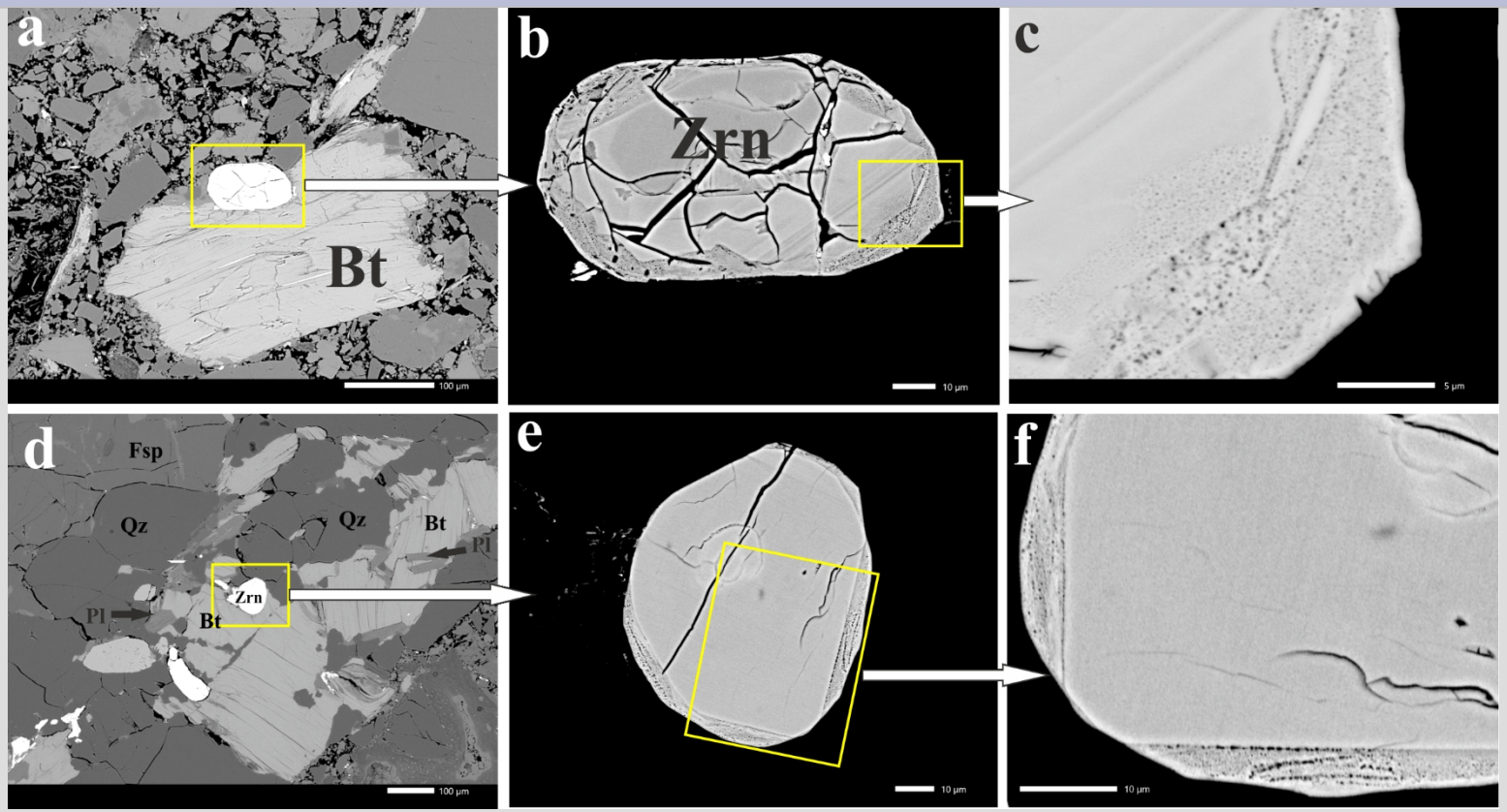


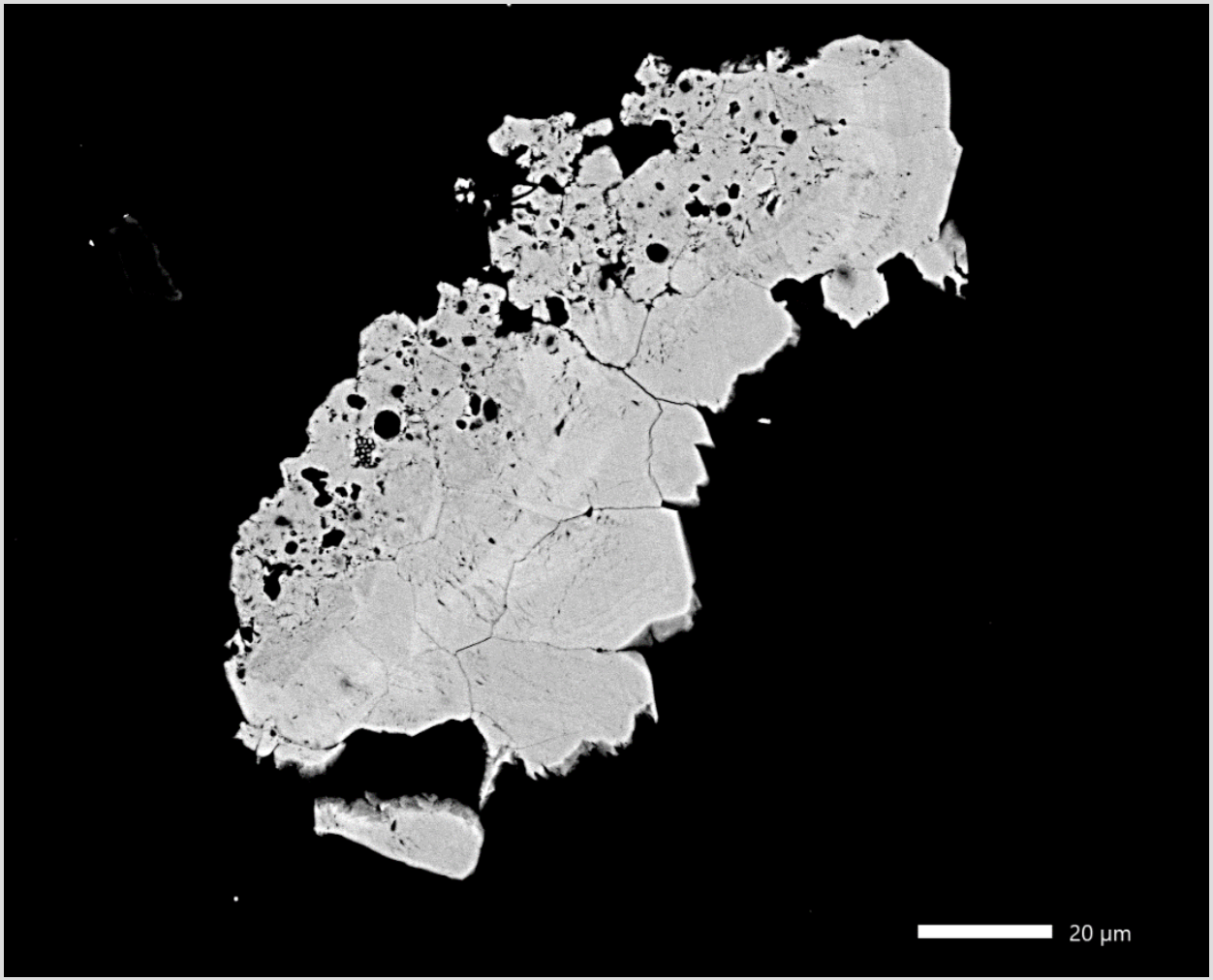
Fig. 5b
glass
100 µm
119/2
a
granular rim
Zrn
10 µm
119/2
b
Fig. 5d
glass
50 µm
c
granular texture
10 µm
d
glass
Fig. 5f
500 µm
128/478
e
Granular textures
20 µm
128/478
f

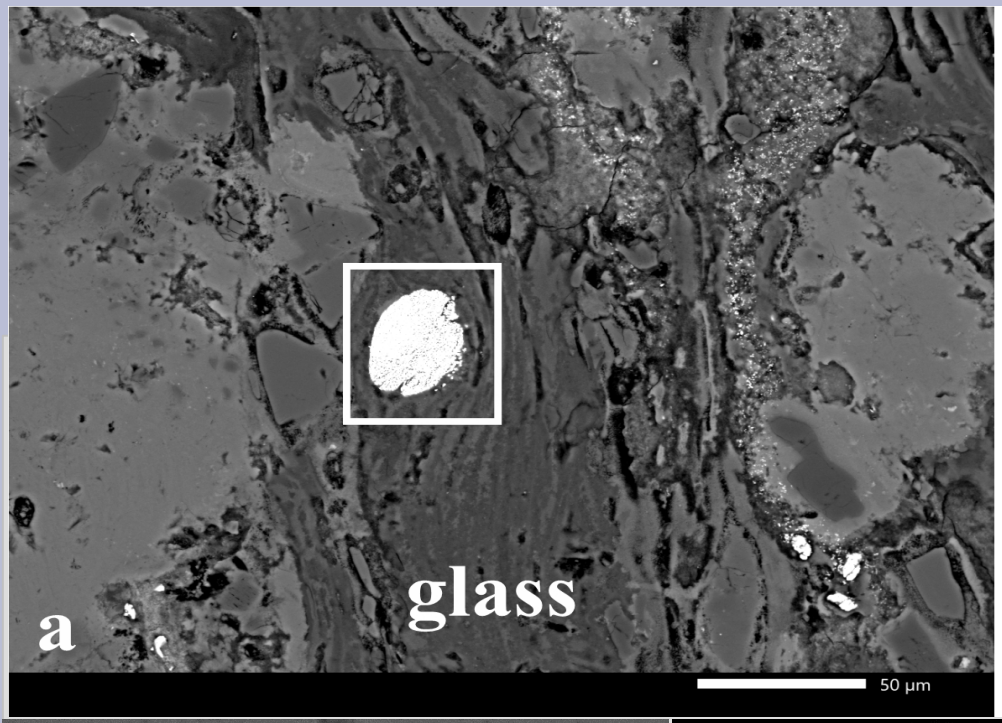
**Петрологические признаки плавления циркона в импактном процессе:**

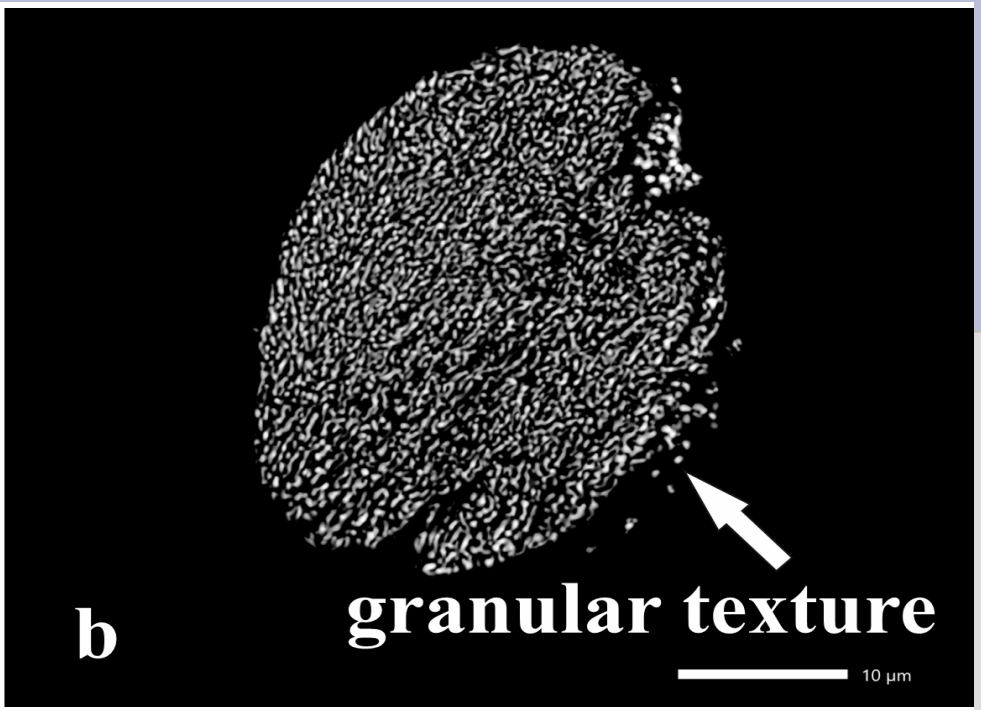
1. **Кристаллизация бадделеита в импактном расплаве.**
2. **Резорбция кристалловциркона в импактном расплаве.**
3. **Дизориентированные домены в зернах циркона при EBSD картировании.**

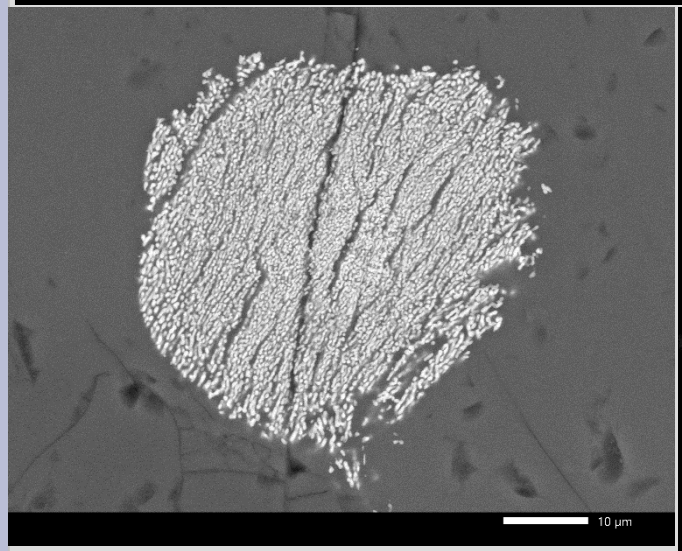

a
Bt
100 µm
b
Zrn
10 µm
c
5 µm
d
Fsp
Qz
Qz
Bt
Pl
Zrn
Pl
Bt
100 µm
e
10 µm
f
10 µm

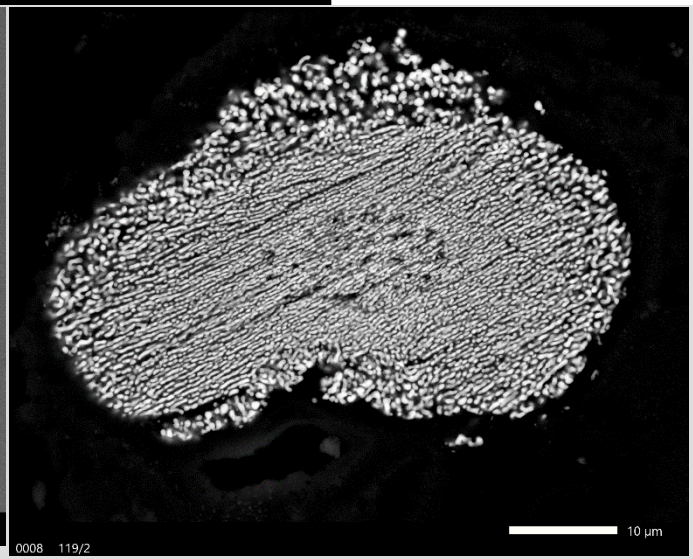
# Резорбция циркона  в стекле зювита Логойской структуры






**Полностью гранулированный циркон, T > 2000 °C**

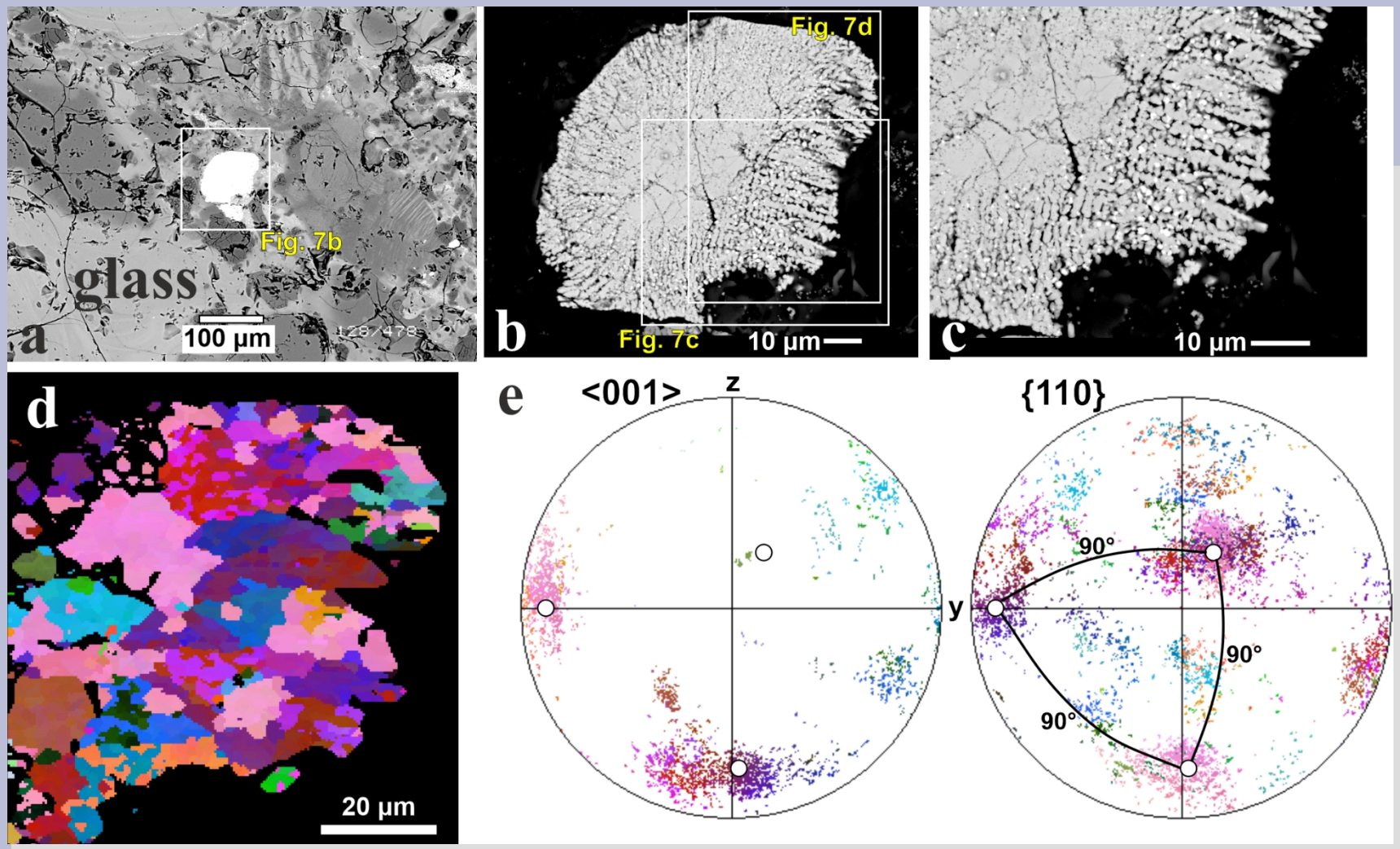
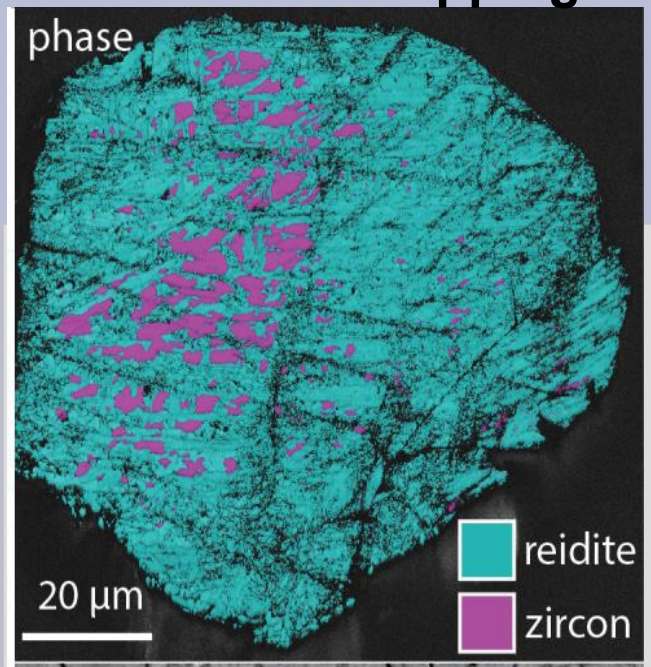
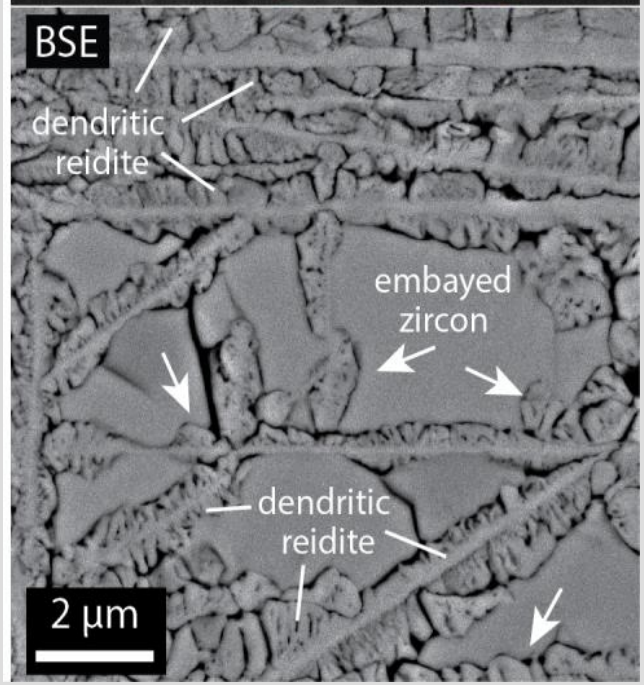
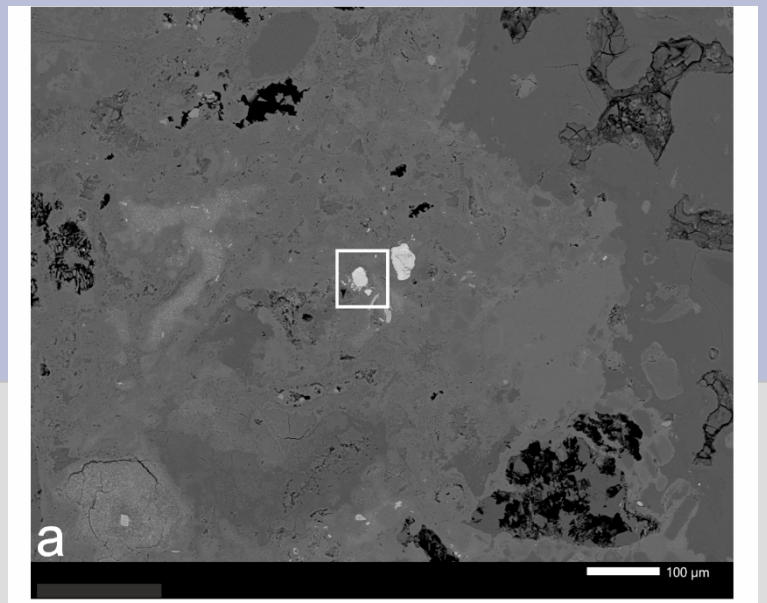


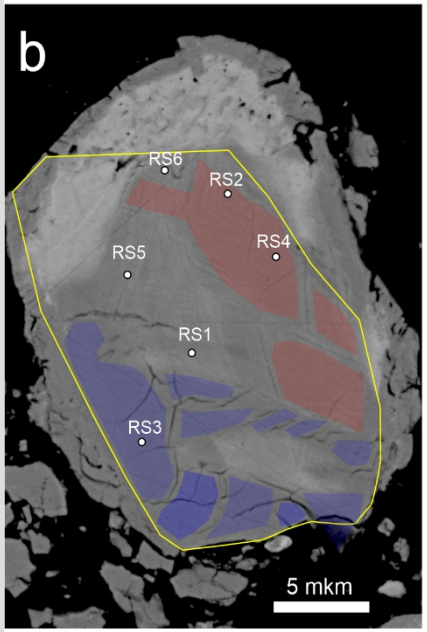
Fig. 7b
glass
a
100 µm
Fig. 7d
Fig. 7c
b
10 µm
c
10 µm
d
20 µm
e
<001>
z
y
{110}
90°
90°
90°

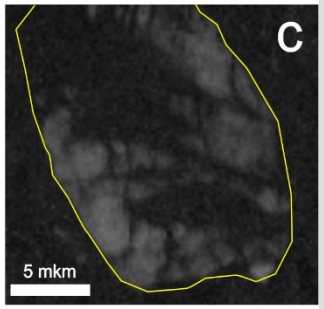
## Chesapeake Bay impact event. EBSD mapping.

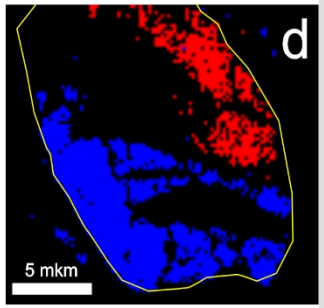


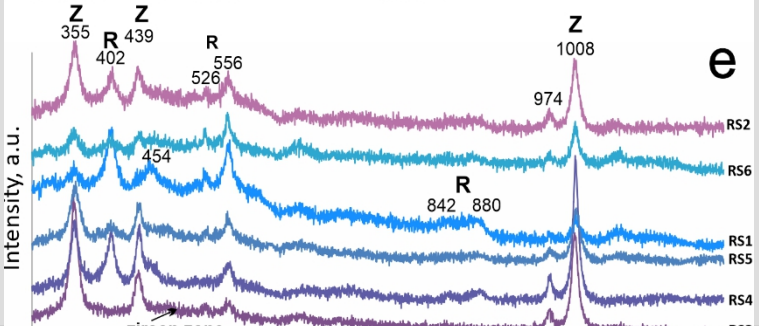



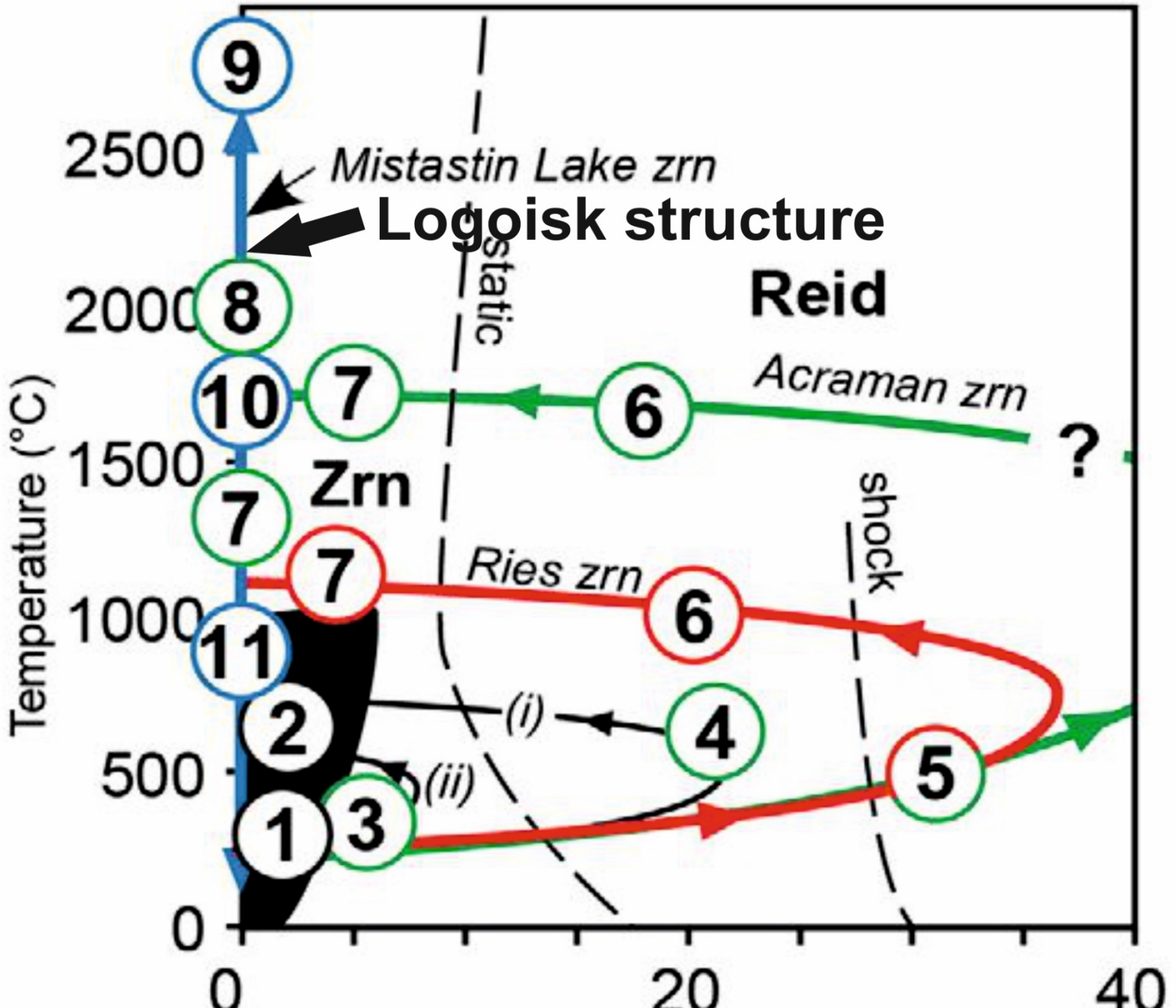




**Логойский кратер.**

**Циркон -рейдит в ударно преобразованном полевошпатовом агрегате. EBSD mapping.**

**Использовали Микрораман 633 nm.**


9
2500
Mistastin Lake zrn
Logoisk structure
2000
8
static
Reid
10
7
6
Acraman zrn
?
1500
Zrn
7
shock
7
Ries zrn
6
1000
11
2
(i)
4
500
(ii)
5
1
3
0
0
20
40
Temperature (°C)

# Спасибо за внимание!