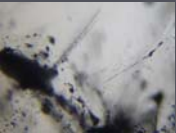
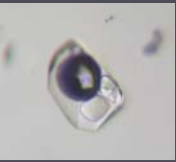


# **Morphological Features and Genesis of Fluid Inclusions in Quartz Crystals from the Chamber Pegmatite of Upper Cretaceous Monzonites, Eastern Bulgaria**

**Paraskev Petrov  
Sofia University**



- ❑ **Problem: Origin of Fluid Inclusions**
- ❑ **Method: Optical Microscopy**
- ❑ **Types of Fluid Inclusions: Primary, Secondary and Pseudo-secondary**
- ❑ **Refilling of Fluid Inclusions in Qz-crystals**



REVIEWS in  
MINERALOGY  
Volume 12

# FLUID INCLUSIONS

An introduction to studies of all types of fluid inclusions, gas, liquid, or melt, trapped in materials from earth and space, and their application to the understanding of geologic processes.

EDWIN ROEDDER  
UNITED STATES GEOLOGICAL SURVEY  
RESTON, VIRGINIA 22092



Series Editor: PAUL H. RIBBE  
Department of Geological Sciences  
Virginia Polytechnic Institute & State University  
Blacksburg, Virginia 24061

MINERALOGICAL SOCIETY OF AMERICA

TIME AND DECREASE IN TEMPERATURE →

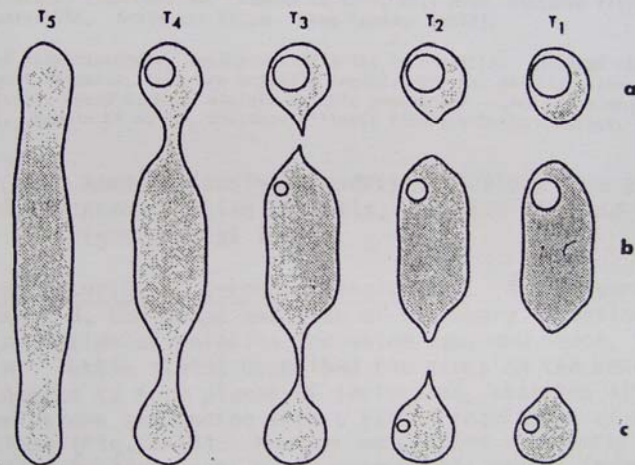
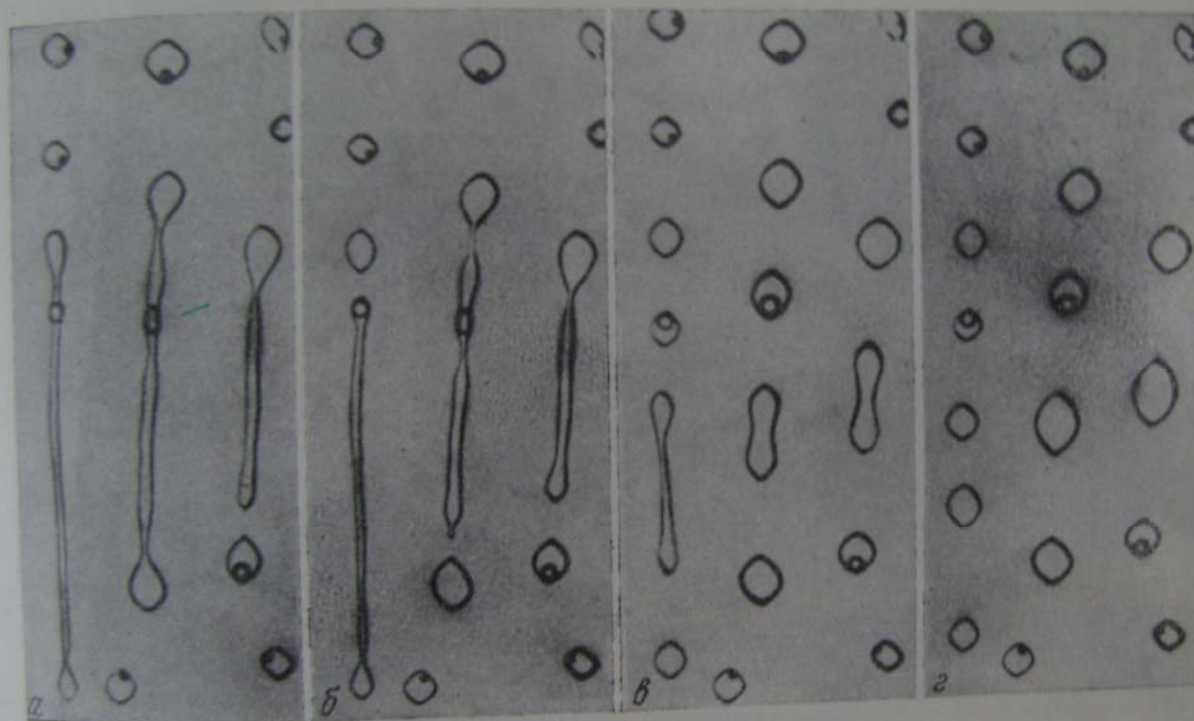
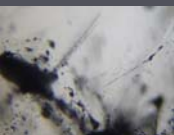


Figure 3-9. Necking down of a long tubular inclusion. The original inclusion, trapped at temperature  $T_5$ , breaks up during slow cooling to form three separate inclusions, (a), (b), and (c). When reheated in the laboratory, inclusion (a) would homogenize above the true trapping temperature  $T_5$ , inclusion (b) would homogenize between  $T_3$  and  $T_4$ , and inclusion (c) would homogenize between  $T_2$  and  $T_3$ . -Adapted from Roedder (1962b).

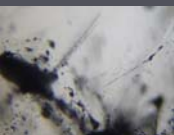
Literature on the topic



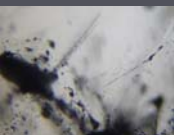
средних включения) наблюд  
померно большой пузырек газа.

Literature on the topic

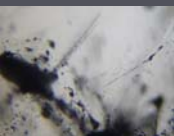
жидкой и газообразной фаз. X 200  
после охлаждения пре-



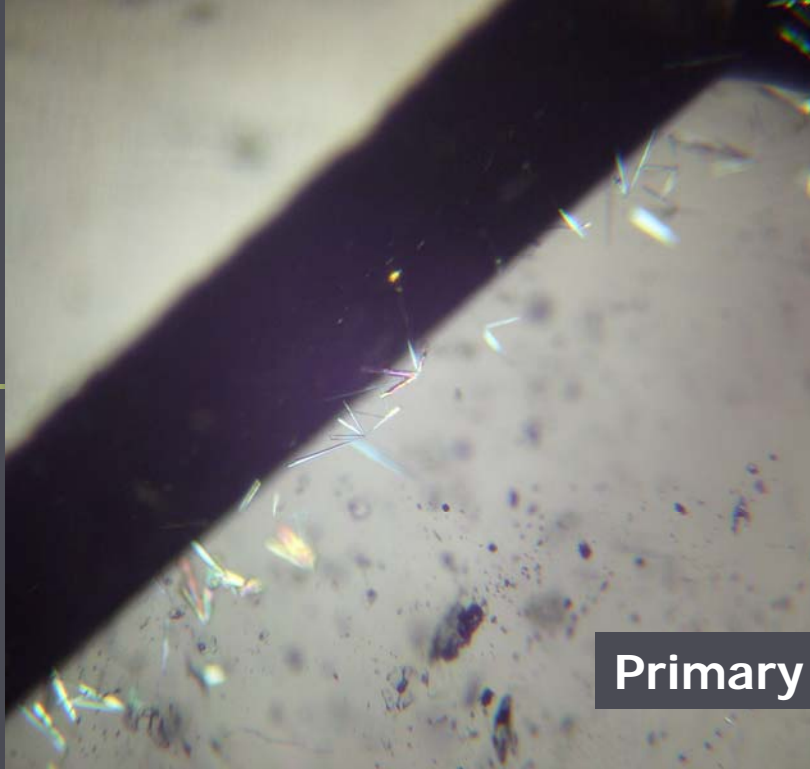
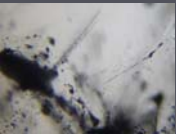
**Double polished plates of smoke quartz crystals in chamber pegmatite, Tschernomoretz, Eastern Bulgaria**



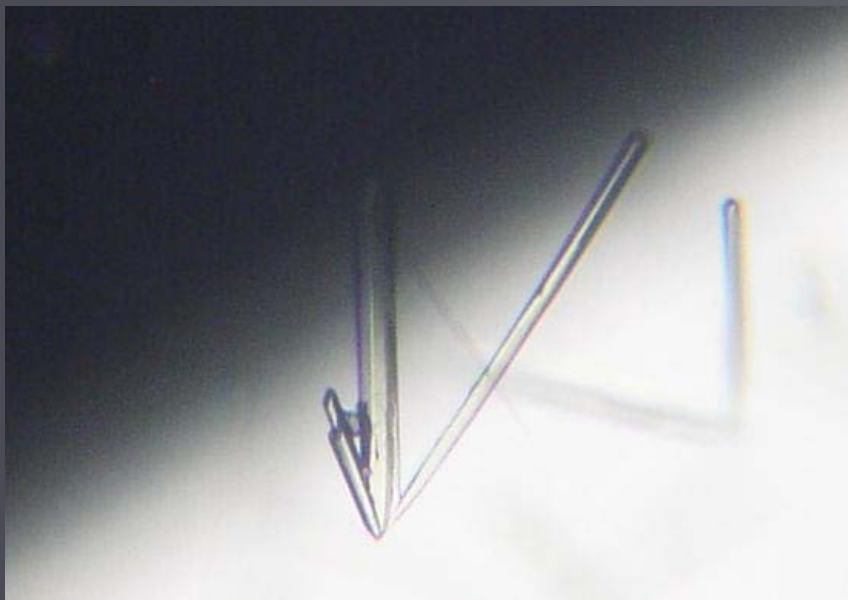
**Double polished plates of smoke quartz crystals in chamber pegmatite, Tschernomoretz, Eastern Bulgaria**



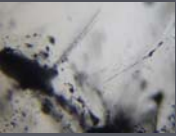
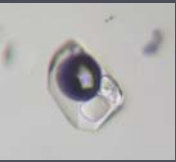
**Double polished plates of smoke quartz crystals in chamber pegmatite, Tschernomoretz, Eastern Bulgaria**



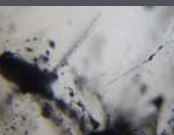
Primary fluid inclusions



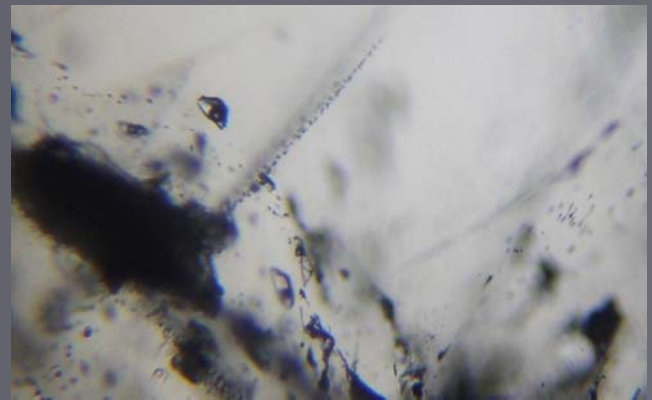
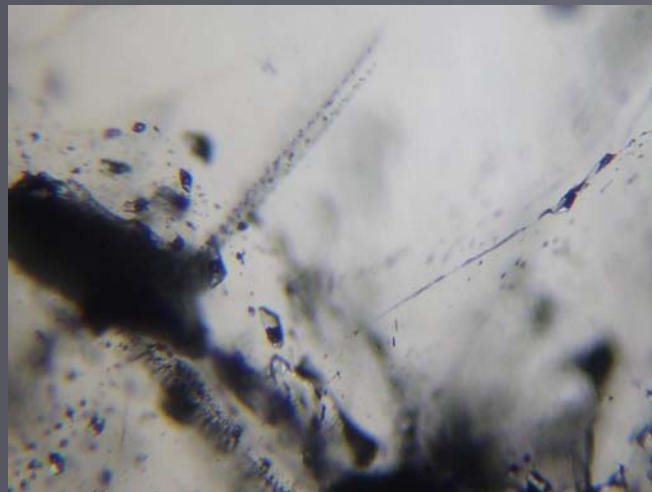
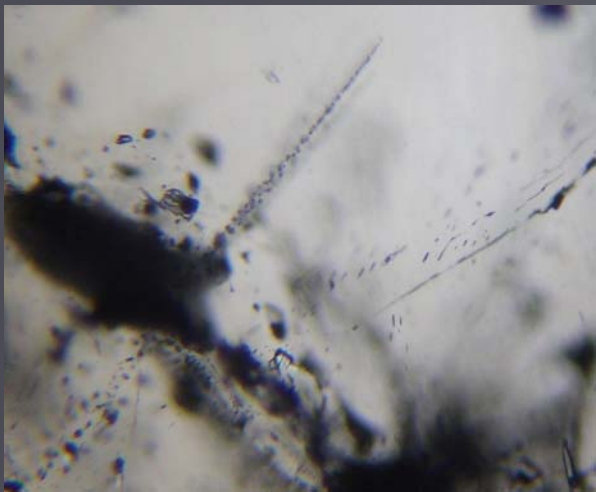
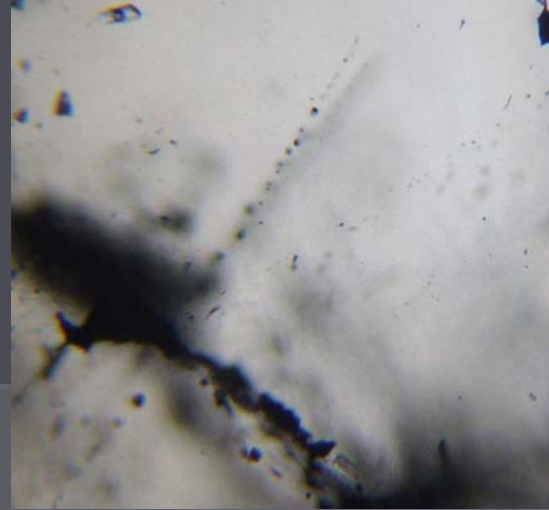
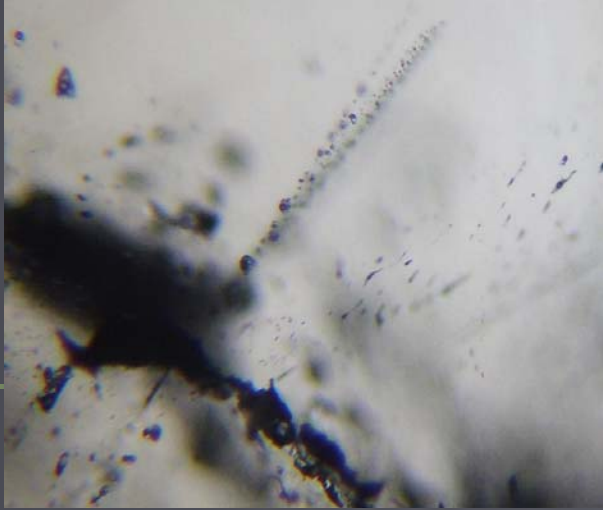
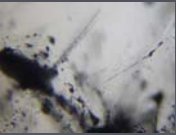
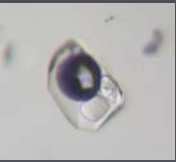




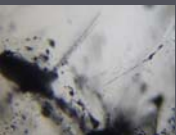
Secondary(?) gas-liquid FI with anisotropic satellite minerals



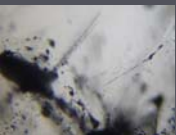
Whiskers - satellite minerals in gas-liquid FI



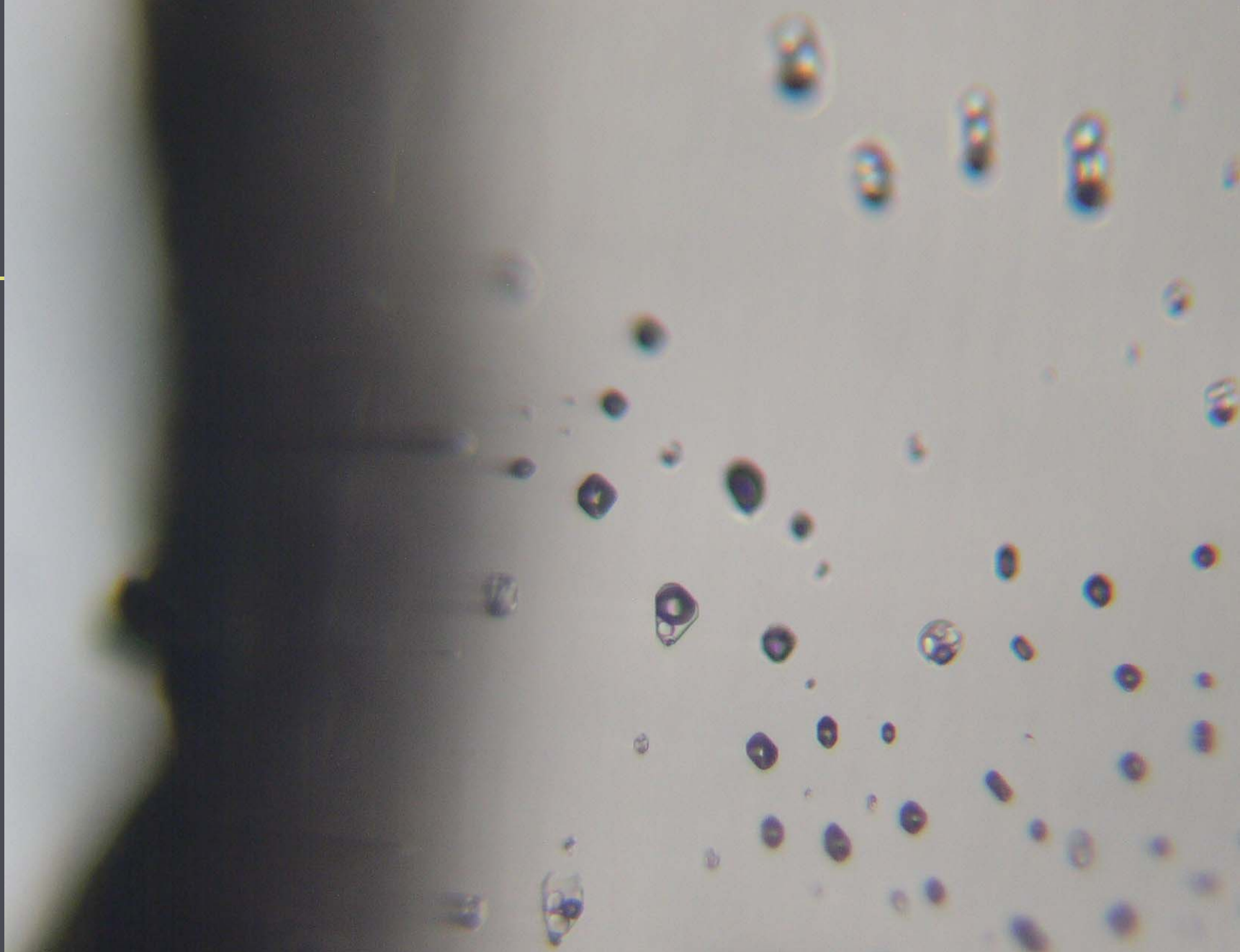
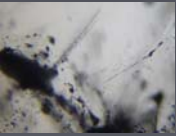
Pseudo secondary(?) FI



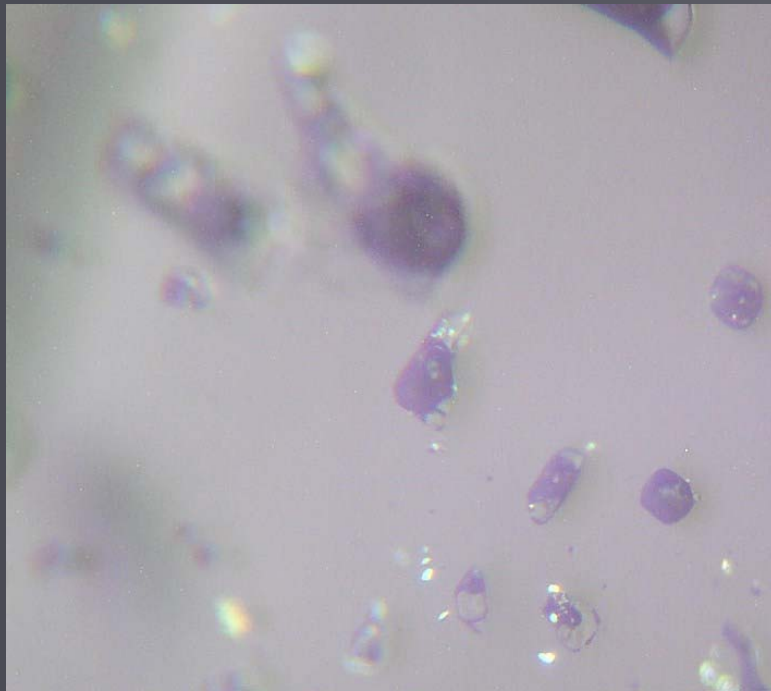
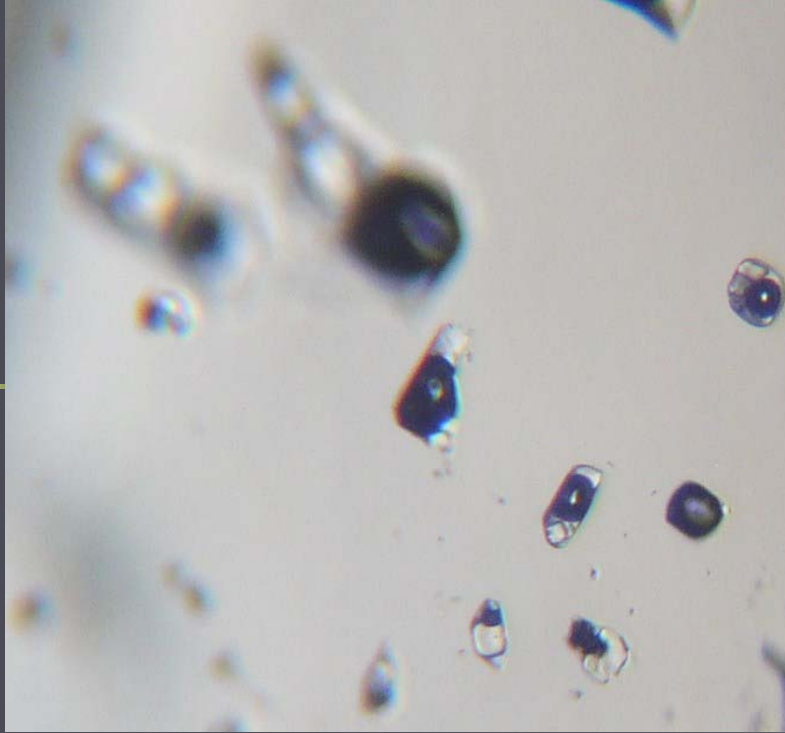
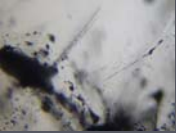
Secondary (?) FI in sub vertical fracture



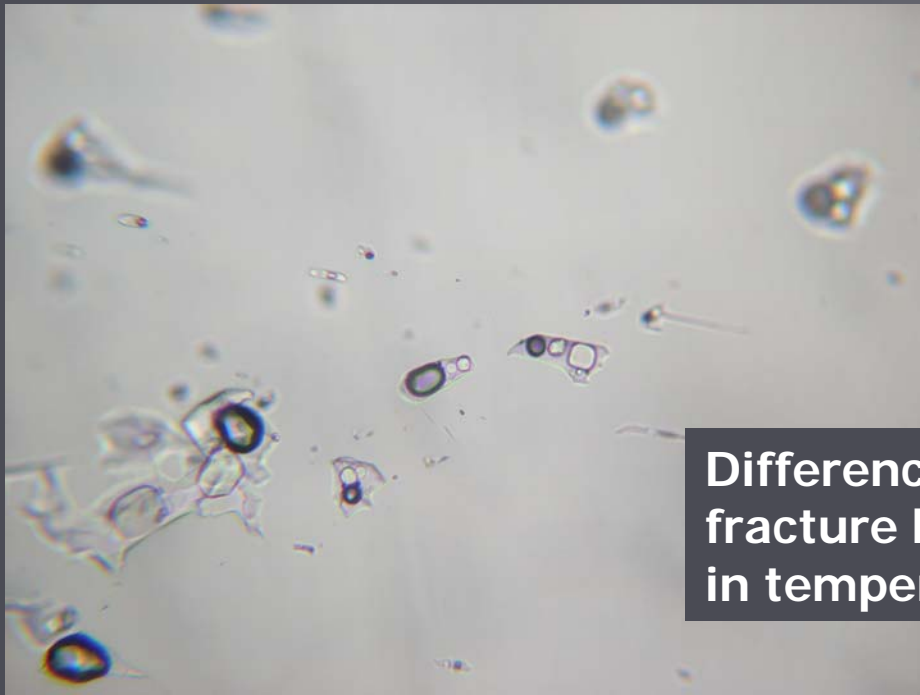
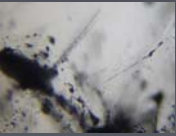
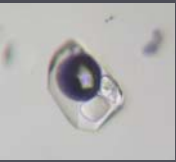
FI registered by different optical focus



Secondary FI formed during decrease in temperature

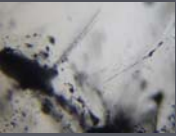
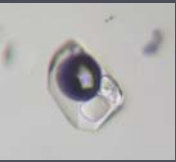


Containing satellite minerals  
secondary (?) FI  
Difference in phase ratio due to  
fracture healing and FI formation  
in temperature decrease

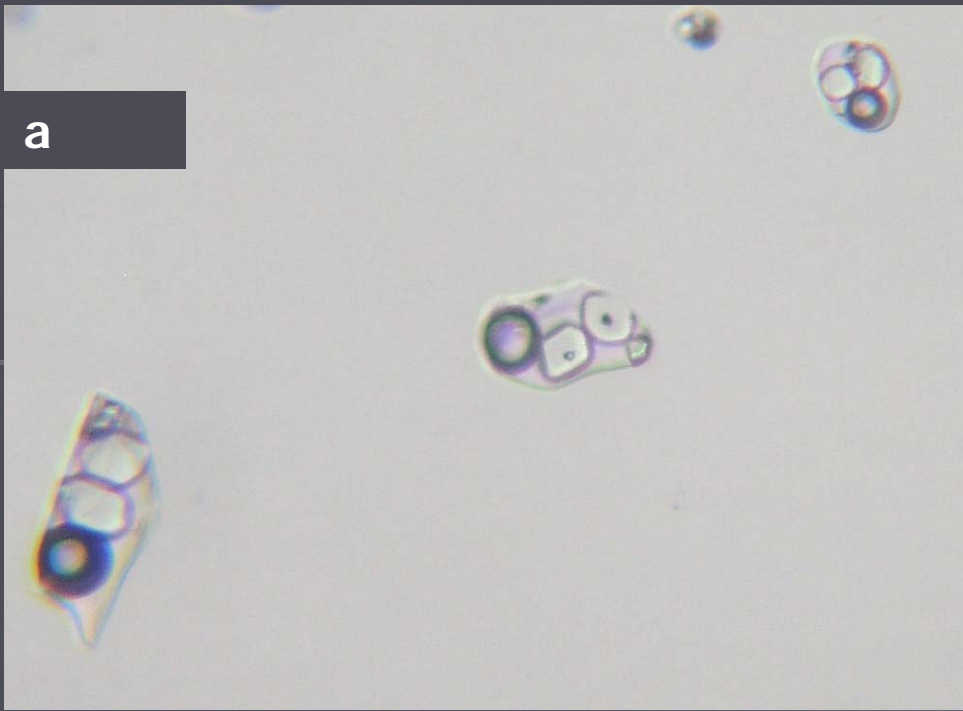


**Difference in phase ratio due to fracture healing and FI formation in temperature decrease**





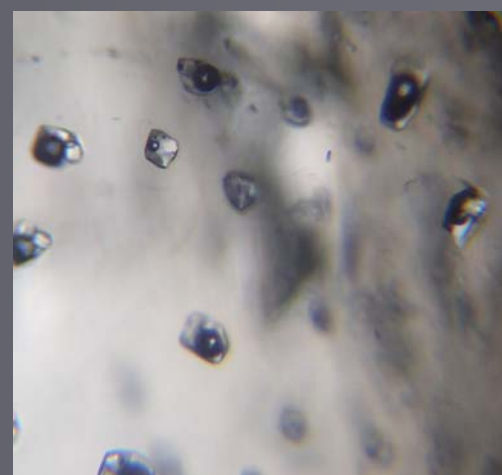
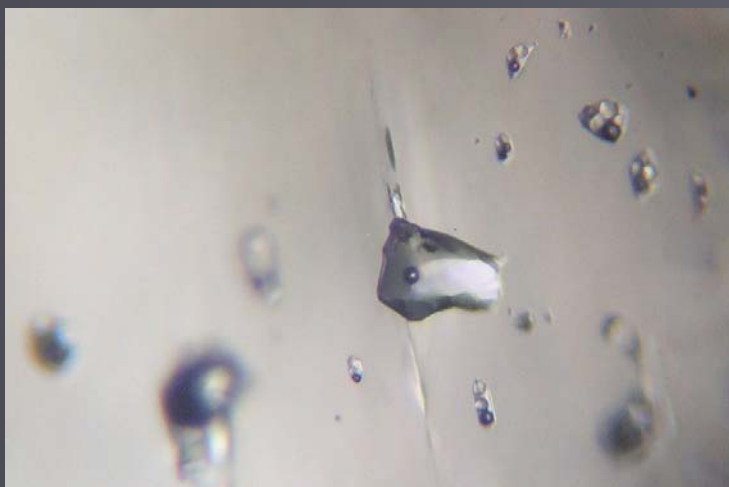
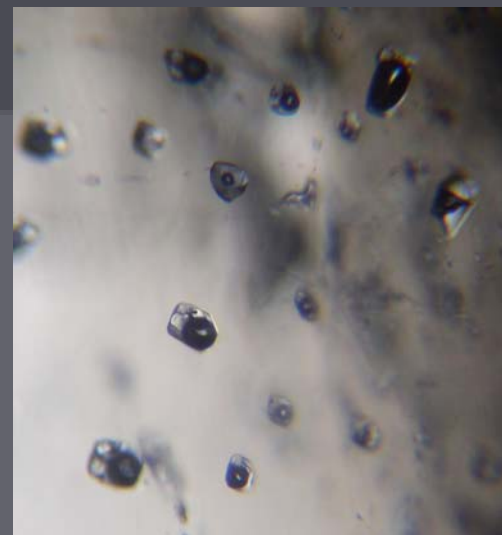
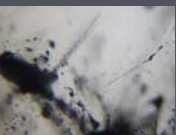
**a**



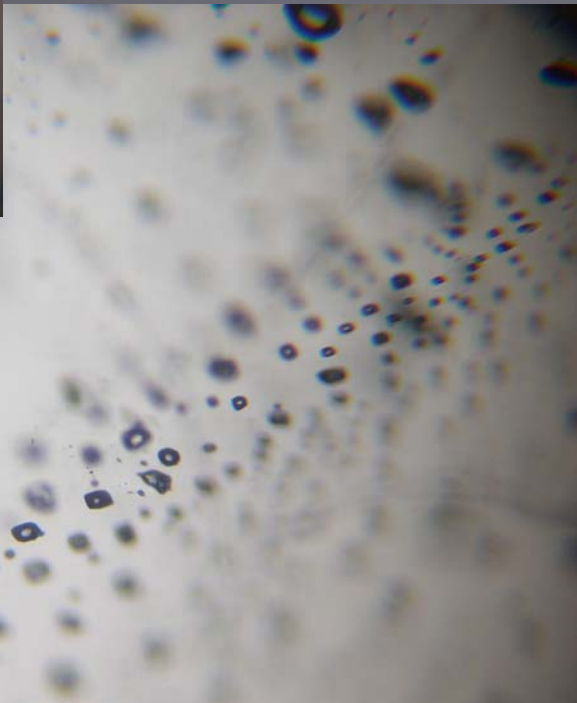
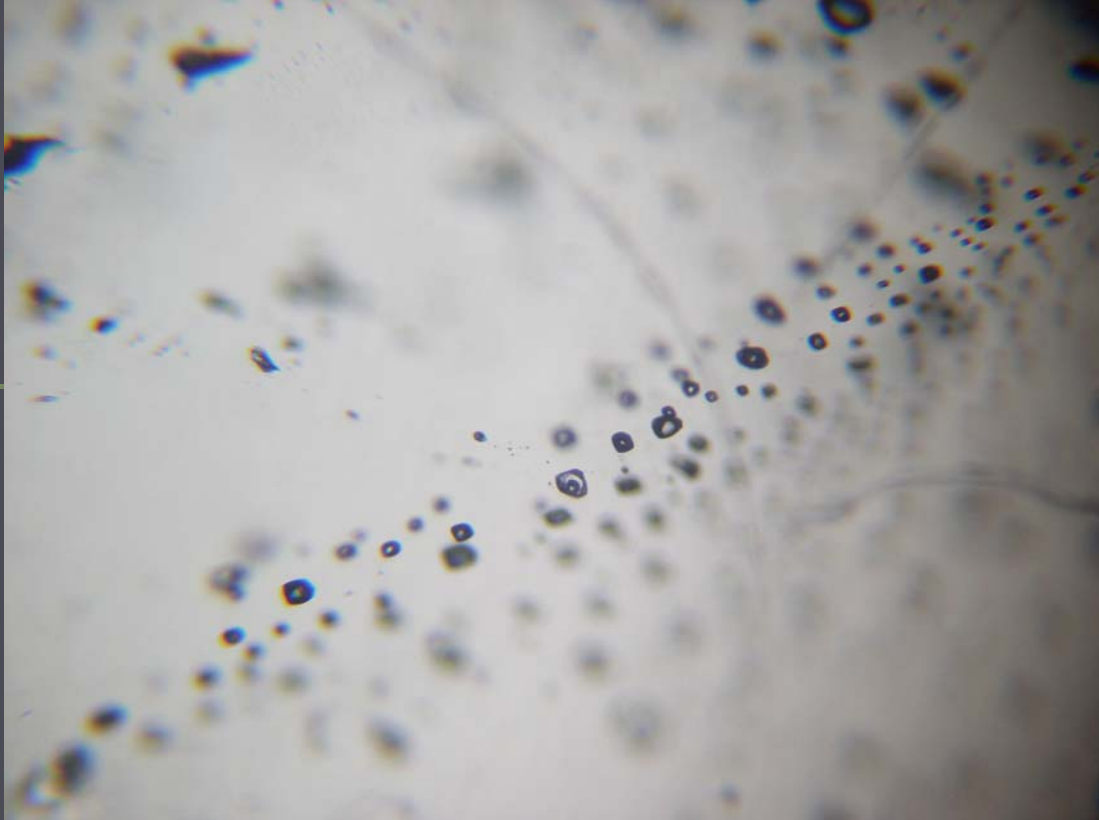
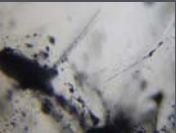
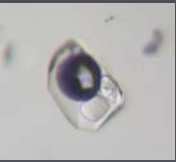
**b**



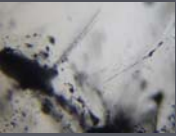
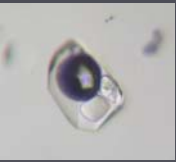
**Brain FI with: a) equal phase ratio; b) different phase ratio**



Refilling of FI in sub horizontal fracture



Refilling of FI in sub vertical fracture



Secondary FI in man made quartz