Separation of apatite and zircon

Using these simple procedures it is possible to avoid the application of the highly toxic, carcinogenic diiodemethane (Methylen-jodide). The density difference between apatite and zircon allows hydrodynamic separation that can results in concentration around and sometimes even over 80%. From such concentrates it is possible producing crystal mounts for apatite FT or zircon U-Pb geochronology, in that the target mineral has proper density on the surface.

METHOD #1

- Take a watch-glass of a diameter of ca. 8 cm.
- Take a dish of size of a soup-plate.
- Take PE or rubber gloves.
- Pour water into the dish.
- Pour the magnetically separated, heavy mineral concentrate in the watch-glass and immerse slowly in the water.
- Make fine, circular gold-panning turns with a loose hinge.
- Keep the edge of the watch-glass ca. 3-4 mm above the water level.
- You can wash down the apatite grains above the rim of the watch-glass and get a zircon-rich concentrate in the interior of the watch-glass.
- Sometimes poor water into the watch-glass.
- You can get back the apatite-rich fraction quantitatively from the dish.

METHOD #2: (for very small amount of heavy concentrates)

- The same procedure, but use ethyl-alcohol. The separation happens only inside the watch-glass, the crystals and the alcohol do not leave it.
- Shake gently the watch-glass, the dish may receive some drops, but not minerals; it is just for safety.
- Do not make strong movements, jus circular ones!
- The apatite-rich and zircon-rich fractions separating and making half-moon like mini “sand-bars”.
- Use a glass eye-dropper and suck up the most zircon-rich and most apatite rich belts of the sand-bars.

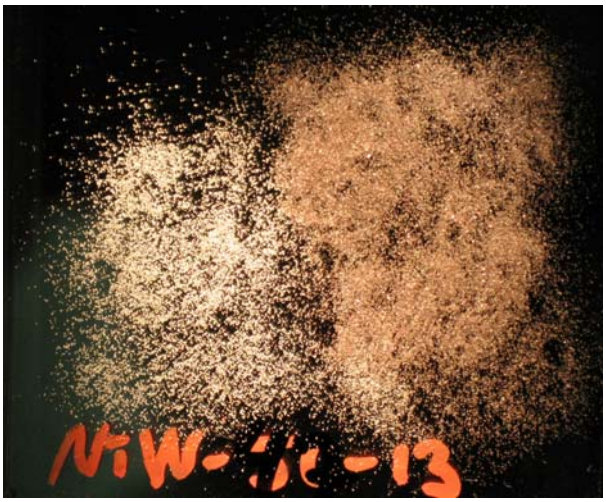

Figure 1: Apatite and zircon-rich fractions in the watch-glass (width of the photo is ca. 4 cm).

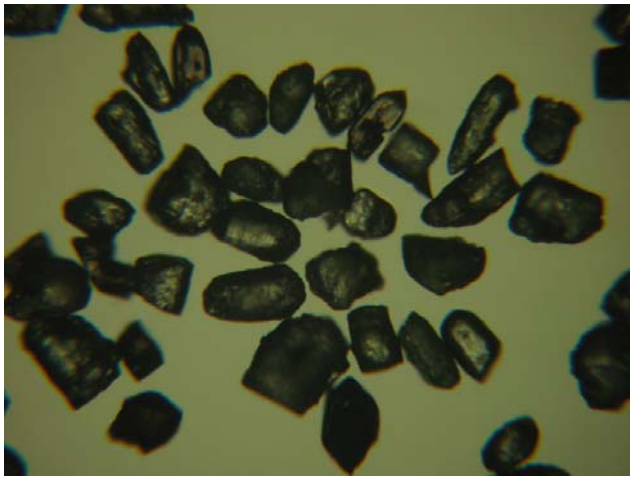

Figure 2: The apatite-rich fraction in transmitted light.

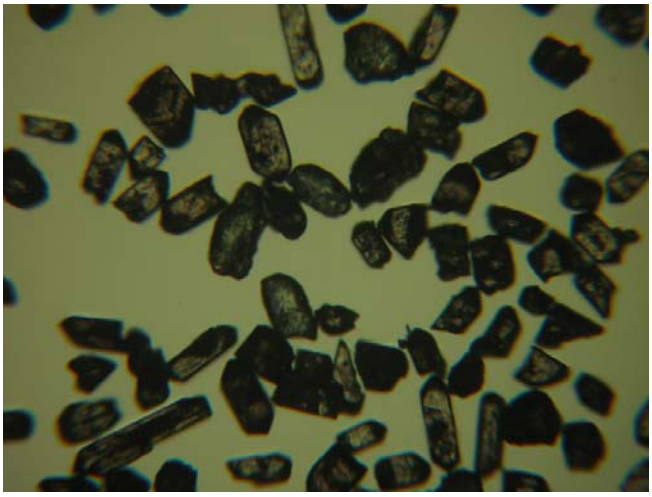

Figure 3: The zircon-rich fraction in transmitted light.