



DAYBREAK NUCLEAR AND MEDICAL SYSTEMS, INC.

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Apparatus and Supplies for Sample Preparation (TL or OSL)

Pottery-Fine Grain

vise with stainless steel 'V' for sample crushing, or hydraulic press with hardened steel cup
13 x 100 mm test tubes, pyrex or kimax with writing spot
12 x 100 mm test tubes, polypropylene disposable
small ultrasonic bath
one half dram shell vials (Kimble 60931-12 only)
aluminum sample disks (Daybreak can provide material, 0.4 mm thick 1100 alloy, half hard temper)
circle punch for disks (obtained from jewelry supply company—3/8 inch is used—1/8-1/2 inch provided)
drying oven, single wall OK, to reach 200C
pipettor, 500 microliter, with tips (must withstand acetone)
sample storage boxes, opaque, to hold sample disks, or disks in shell vials
acetone (Mallinckrodt H580 lab grade or equal—some types, particularly the 'best grades' seem to have something in them that causes a troublesome spurious signal—they must be tested)
dilute HCl or acetic acid to remove carbonates
small cheap centrifuge that takes 12mm polypropylene disposable test tubes
fume hood advisable

Pottery or Sediment Inclusion

As above, plus:

Frantz magnetic separator, if available

Small sieves with 75, 125, and 150 microns mesh

Heavy liquid media for separations (reusable sodium polytungstate from Sometu-US, email sometu@aol.com)

filter paper with funnel cones

HF

50 ml Teflon beakers

Silicone (pure) spray to adhere sample to disks---there is a German medical spray known not to cause spurious signals

fume hood necessary if HF used (HF cleaning may not be necessary for OSL, depending on method)

Sediments-Fine Grain (see procedure appended)

As fine grain, plus:

1000 ml beakers
dilute HCl
large lowspeed centrifuge tubes
lowspeed centrifuge
hydrogen peroxide
63 micron mesh sieve
1000 ml graduated cylinder, stoppered
dispersant
methanol
1 ml pipettor with tips

Flint (see Aitken, pp192-3)

As fine grain pottery, plus:

Steel percussion mortar, or hydraulic press with hardened steel cup

Dilute HCl or acetic acid

Laboratory Lighting

TL requires low level safe light (red or amber) from filtered incandescent or fluorescent lamps. OSL is much stricter, and labs are almost completely dark, with workers using filtered flashlights or red LEDs mounted on headbands. The lab door must have some kind of light-lock, usually a box inside the doorway with a heavy opaque drape to keep light out when the door opens. Windows must be blacked out. White lights must be removed or have a protected switch to prevent accidental switching on.

Sample preparation areas must have the same light protection.

Other lab requirements

Water is optional, but handy for washing glassware. A fume hood will be necessary for use with HF, and recommended when acetone, methanol, and HCl are used. Power is 230VAC 50/60 Hz. The power for the vacuum pump must be specified for ordering; all Daybreak equipment has universal power input. The purge gas for TL (or the TL normalization part of the sequence in single aliquot regenerative OSL) may be prepurified or oxy-free nitrogen (99.998% purity or better) or a similar grade of argon.

We are finding out sources for silicone spray and lamp filters, and will post later.