

Technical Tip

A Stable Lead Staining Solution

A Stable Lead by Modification of Sato's Method Lead staining solution: Calcined lead citrate - long term storage lead solution. Since the first introduction by Watson (1958), various lead stains have been developed in order to increase contrast and reduce contamination in sections for electron microscopy. One of the disadvantages of lead stains developed to date is that the staining solution is apt to produce precipitates of lead carbonate, resulting in difficulty for long-term storage of the stains. Now there is a new stable lead solution which is free from precipitates when kept at room temperature for over 1 year.

The stock lead solution is made up as follows:

Calcined Lead Citrate 0.20 g
Lead nitrate 0.15 g
Lead acetate 0.15 g
Sodium citrate 1.00 g
Distilled water 41.00 ml

The calcined lead citrate is obtained by heating crystal lead citrate for several hours in a melting pot (200°C to 300°C) until the color changes to a light brownish yellow. NOTE: Overheated lead citrate with a dark brownish or black color can't be used.

The above reagents are placed in a 50 ml volumetric flask and mixed well to produce a yellowish milky solution. Then 9.0 ml of 1N NaOH is added to the solution and mixed well until the solution becomes clear with a light yellowish color. The solution is then transferred to an amber glass with a screw cap bottle for storage. The solution can be stored at room temperature or in the refrigerator for over 1 year.

Reference:

Takamasa Hanaichi et al. (1986) "A Stable Lead by Modification of Sato's Method". J. Electron Microsc., Vol. 35. No. 3. 304-306.