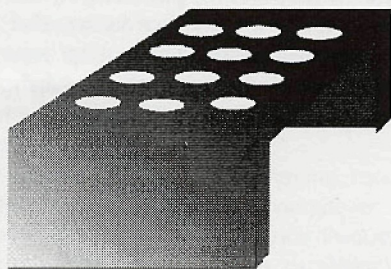


Using a Formvar-Coated Bridge to Apply Formvar Support Film to TEM Grids

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One conventional method for picking up ultrathin sections for transmission electron microscopy (TEM) is to prepare the mesh or slot grids with a formvar support film and then pick up your sections as they are floating in the knife boat. An alternative method is to first pick up sections on a naked grid and then lay them down on formvar film suspended over holes drilled in an aluminum bridge. I use this method when picking up serial sections on slot grids. A description of the method follows. The bridges I have were manufactured at the University of Georgia Instrumentation Shop. They can also be purchased pre-made (for example, from SPI, Inc. They list them as Domino Racks), or one can make them from aluminum with a vise and drill. The sample bridge in the figure is similar to what I use. It is 5 cm long, 2.5 cm wide. The feet are 1 cm long



and the holes are approximately 5 mm in diameter. The thickness of the aluminum can vary, although I have found that if it is too thin, it is more likely to bend and fold with all the holes.

To prepare the formvar-coated bridges, make a formvar support film floating on water – as you normally would. Whereas one would typically lay the grids on the formvar film and then collect them for use, instead pick up the entire film with the bridge by lightly touching the bridge to the film. Hold the bridge by its feet and touch the film with the top surface of the bridge, being careful to not press into the water too far or a spider web-like artifact might form from the stress on the film. The coated bridges can be kept in plastic Petri dishes until needed. The shelf life is variable according to the environment. If the coated bridges have been sitting around for several weeks, I check them under a dissecting scope for any obvious holes, spider-webbing or other defects. And, of course, lay a grid on the formvar and check one under the TEM before using them.

I usually dip slot grids in old formvar that would no longer provide a clean formvar film. Dipping will coat the grid and not span the hole. This provides a relative hydrophobicity to the grid and allows the formvar film to stick better to the grid. Also, the hydrophobicity will cause the water and sections (picked up from the knifeboat) to stay in the hole and not sit over the metal. I have found that it is easier to come up from under the sections with these grids, and position the sections over the hole. As you pull the grid out, the sections should follow. The sections should then be floating on the water, which is sitting as a bead in the hole. Lay the grid, with sections, on the formvar film sitting over a hole. Sections should stay in the hole and, as the water dries down, the sections will settle onto the formvar film. There is usually little or

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