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A simple device for applying solutions to non-bound preparative thin-layer chromatographic plates

MOTTIER AND POTTERAT'S¹ method of covering glass plates with dry adsorbent has been used by MISTRYUKOV^{2,3}, ČERNÝ *et al.*⁴ and VACÍKOVÁ *et al.*⁵ to make preparative thin-layer chromatographic plates. The preparation of non-bound plates is less cumbersome and quicker than that of preparative bound plates. No special applicator is required to spread the adsorbent, and no need exists for the somewhat lengthy drying procedure⁶ which is required to avoid cracking of bound plates of sufficient thickness for separations on a preparative scale.

The most tedious operation in the use of non-bound plates has been the application of the substrate solution. Micropipettes have been used commonly, but with these it is difficult to apply the solution in a uniform thin line. MORGAN'S⁷ device for obtaining a series of spots by a row of capillary tubes was tried in this laboratory, but the tubes tended to become clogged with adsorbent. RITTER AND MEYER⁸ have reported an apparatus with which the solution is placed onto the adsorbent from a hypodermic needle as the plate is moved slowly back and forth. This procedure was not satisfactory in our hands. A device consisting essentially of a wedge has been described⁹ for the application of microliter quantities of solution to electrophoresis paper. A simpler and readily assembled wedge of greater capacity is described in this note.



Fig. 1. Side view of the applicator.

The device consists of two $\frac{1}{8}$ -inch-thick glass plates (19 cm \times 5 cm) separated by spacers placed at intervals between the plates. The plates are held together in several places by strips of masking tape. The bottom edges of the two plates are beveled so that a wedge is produced (Fig. 1).

The applicator is clamped on a ring stand in a level stationary position, and the solution is placed in a small trough (length, 20 cm; height, 1.2 cm; top width, 1.0 cm) which is then placed under the applicator and moved up to bring the wedge into contact with the surface of the solution. In this manner some of the solution is drawn up between the plates by capillary action. A device of the dimensions described, with spacers consisting each of 16 layers of household aluminum foil, will take up approximately 1 ml of benzene solution. The charged applicator is leveled again carefully, and the chromatographic plate is raised by a laboratory jack to establish contact with the wedge. The adsorbent draws out the solution from the space between the glass plates without significantly damaging the layer. A thin uniform line of material is thus deposited. Development with solvent then gives relatively narrow bands which are straight and uniform. This method has proved quite satisfactory in resolving on a single plate a mixture containing up to 100 mg of material and allowing the processing of 2 g of mixture in one day.

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