RESULTS OF THE SURVEY ON MOUNTING MEDIA

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A fair number of reactions were received, concerning the different mounting media used in nannofossil slide preparation, in response to my request for information (*JNR*, **16**(3)). There is a wide range of products, and I have the impression that this survey includes most of them. As most of us know, there are basically two types of medium: those affixed by applying heat, and those by applying UV light (although only one example of the latter was reported). The various opinions on each product appear in the remarks: remarks from different individuals have only been slightly edited, and are prefixed by an asterisk.

(Editor's note: xylene and toluene are carcinogens. The products containing these solvents should be used in a fume-cupboard.)

Product name: Norland Optical Adhesive 61
Brand name: Norland Optical Adhesive
Supplier: Norland Products Inc., 695 Joyce Kilmer Avenue, New Brunswick, N.J. 08902, USA; Tech Optics, Unit 6 Cala Industrial Estate, Tannery Road, Tonbridge, Kent TN9 1RF, UK.
How to apply it: 2/3 drops applied to slide or coverslip, mount coverslip, expose slide to UV light (around 30 minutes).
Known durability: >10 years
Refractive index: 1.56
Remarks: *does not keep very long in its bottle, even with refrigeration, so you have to be prepared to order it every 6-12 months; *UV light for curing is not present at all remote sites (*sunlight is only unavailable at the North and South Poles during winter! - Ed.*), while hot-plates for curing other media can be found at almost any location; *we tried [Norland] a few years ago but we were not pleased with the way [the nannofossils] seemed to have a milky glow in phase. This gave me a headache after a few hours; *one of our contractors used [Norland] but I asked them to discontinue this because it caused milky haloes around the coccoliths, and appeared to have shrunk, pulling coccoliths apart (*it's possible these effects are caused by additives in the drilling-mud - Ed.*); *having used Canada balsam, a petroleum jelly recipe, Petropoxy and Lakeside 70 previously, we have found Norland to be the cleanest (droplets from the bottle do not need to touch anything but the slide, there is no excess to clean off), easiest (does not need to be mixed and can be cured in sunlight in the absence of a UV lamp; slides do not require sealing) and safest (no toxic fumes, no heat) medium to use. We have experienced no effects on the nannofloras mounted with it, for a range of sediment types and ages, including industrial samples.

Product name: Canada balsam
Supplier: Sigma Chemical Co., PO Box 14508, St. Louis MO, USA; Aristoforma-Interchemica, Kruisweg 405-411, 1437 CJ Rozenburgh, The Netherlands; Serva Feinbiochemica, Heidelberg/NewYork.
How to apply it: 1 drop on glass slide or coverslip (*N.B.* do not apply medium directly onto smear), heat to 70-80°C to let the solvent evaporate (test by scooping a little with a needle and letting it cool: if it becomes brittle all solvent has evaporated), apply coverslip. Excess Canada balsam can be removed, and the edges of the coverslip sealed with nail-polish. Alternatively, a cellulose acetate filter (millipore HAWP-filter) containing the plankton can be transferred onto the medium *upside down*. When the filter is soaked, the ensemble can be mounted on a slide with another (heated) drop of Canada balsam.
Known durability: >25 years
Refractive index: 1.52-1.54
Remarks: *we had some problems with coccoliths dissolving (on the slide) in the past, when we used the rapid, high-heat method. When we realised that fluid Canada balsam has a pH of 4, we switched to the slower, low-heat method to make sure all solvent had evaporated and the pH was neutral; *Canada balsam is in fluid form (*not necessarily - Ed.*), stored in a bottle. Use fume-cupboard when applying; *we ceased to use Canada balsam about 10 years ago for two reasons: (a) it became too expensive, compared to other media, and (b) the solvent was (is?) xylene, a carcinogen.

Product name: Synthetic Canada balsam
Brand name: Rhenohistol (no longer distributed)
Supplier: E. Merck, Darmstadt, Germany.
How to apply it: liquid medium, best results when cured rapidly with high heat; coverslip must be lightly tapped during heating to break seal on the edges of the coverslip to allow for out-gassing in order to obtain proper cure.
Known durability: >18 years, when properly cured
Refractive index: 1.52

Product name: Synthetic Canada balsam
Brand name: Caedax (no longer distributed)
Supplier: E. Merck, Darmstadt, Germany.
How to apply it: best results when cured rapidly with high heat.
Known durability: >28 years, when properly cured
Refractive index: 1.56
Remarks: *this liquid medium is still my first choice to ensure excellent slide preparations but supplies are very low. Its use is comparable to that of your grandmother's good china: "you bring it out only for special occasions"; *I first used Caedax, which was smelly but great otherwise. Those slides are still O.K. after 20 years, but it was taken off the market. Then I used Petropoxy, and all my slides that didn't have abundant calcite in them began to dissolve (*N.B. Petropoxy 154 should not be used as a mounting-medium under any circumstances, since many people discovered that it dissolves nannofossils on the slide! -Ed.*). I then switched to Norland Optical.

Product name: Thermoplastic resin
Brand name: Lakeside 70
Supplier: Production Techniques Limited, 13 Kings Road, Hampshire, UK; Production Techniques Limited, RFD5, Concord Ridge, New Town, CT-06470, USA; more practically, ask any friendly thin-section technician for a trial sample.
How to apply it: heat slide or coverslip to >70°C, and apply like lipstick.
Known durability: >10 years
Refractive index: similar to Canada balsam
Remarks: *solid, fume cupboard not needed. Soluble in white spirit (paintbrush cleaning-fluid). I apply Lakeside 70 to the coverslip then put it on the prepared slide; *my (admittedly small) experience of Lakeside is that it is messy to use (it takes a lot of practise to get the right amount on the coverslip and be able to get the coverslip of the stick before it cures!), easy to get contaminated (it comes in stick form, with no covering), and you have to be quick to get the bubbles out before it sets solid (it sets as soon as you take it off the hotplate).

Product name: Piccolite 60% in Xylene
Supplier: Ward's.
How to apply it: heat slide with smear on it to 350F (180°C). Apply 1 drop to coverslip, place on slide, 'cook' slide for about 10 minutes; most of the small bubbles will march to the edge of the slide while it is cooking, the rest will disappear when the slide cools (*N.B.* the bubbles remain in Piccolite in Toluene).
Known durability: >10 years
Refractive index: 1.52
Remarks: *we tried the UV-setting medium a few years ago but we were not pleased with the way [the nannofossils] seemed to have a milky glow in phase. We tested all the brands of mounting media we could find on the market and liked this one best.

Product name: Elvacite acrylic resin
How to apply it: attach nannofossils to coverslip with polyvinyl alcohol (solid). Make 1-5% water solution. Glue coverslip to slide with Elvacite acrylic acid. This is a solid and has to be dissolved in xylene: 32g resin to 60ml xylene.

Product name: Rapid mounting medium for microscopy
Brand name: Entellan Neu
Supplier: E. Merck, D-61 Darmstadt, Germany.
How to apply it: by heating.
Remarks: *personally, I prefer this medium to Canada balsam as I find it easier to handle: it is less viscous and emits less odour when heated,. ...[and] its [curing] time is faster. Any excess amount that has dried up on the slide can easily be scraped off with a blade or paper cutter. There is no more need of acetone in cleaning the prepared slide, unlike when Canada balsam is used.

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