

## A Rapid Method of Ferromanganese Nodule Mounting

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**Abstract.** A rapid method of sample preparation for ferromanganese nodules and crusts mounting is presented here, by using laminated polyester resin, cobalt naphthanate and methyl ethyl ketone peroxide. With this technique vacuum impregnation is not required. Any naturally soft and brittle material can be successfully mounted by this procedure.

**Keywords:** Ferromanganese nodule, Petrographic methods.

### INTRODUCTION

Oceanic ferromanganese nodules and crusts are generally extremely friable in character and hence, any attempt to polish these materials following the normal procedure of rock polishing is extremely difficult. Only a few of the large number of publications on ferromanganese nodules deal with sample preparation techniques for ferromanganese nodules (Sorem and Foster, 1973; Margolis and Glasby, 1973). In most cases vacuum impregnation is an essential requirement, but treatment of vacuum may cause production of artifact mineral (cf. Ostwald and Dubrawski, 1987). A simple method of preparation of finely polished nodules and crusts, is described in this note.

### MATERIALS AND METHODS

In this method, three reagents are used :

- (i) Laminated polyester resin (GP - grade),
- (ii) Cobalt naphthanate solution,
- (iii) Methyl ethyl ketone peroxide (MEKP).

70 ml of polyester resin in mixed with 1 ml of cobalt naphthanate solution in a glass beaker and stirred vigorously with the help of a glass rod for 2 to 3 minutes for thorough mixing. Then 1 ml of MEKP solution is added to this mixture and again stirred vigorously. The mixture is then transferred to the cast(s) within which the air-dried ferromanganese nodules and crusts are kept. Plastic container, even simple hard paper box may be used as casts depending upon the size and shape of the sample (Fig. 1). Then the mixture in the cast (s) with nodules inside, is kept undisturbed for 30 minutes in sunlight or at room temperature to cure and to allow it to get very hard. Once hardened, the sample can be sawed to the required size by any normal cutting tool and subsequently can be ground and dry polished to undertake any necessary ore microscopic, electron microscopic or EPMA study.

Finally, for best polished surfaces, standard diamond polishing method is recommended.

It is important to note that all the reagents are to be stored in deep freeze to retain their chemical and physical properties unchanged. In particular, the polyester resin, if kept in deep freeze, retains its low viscosity for a longer time. Proper

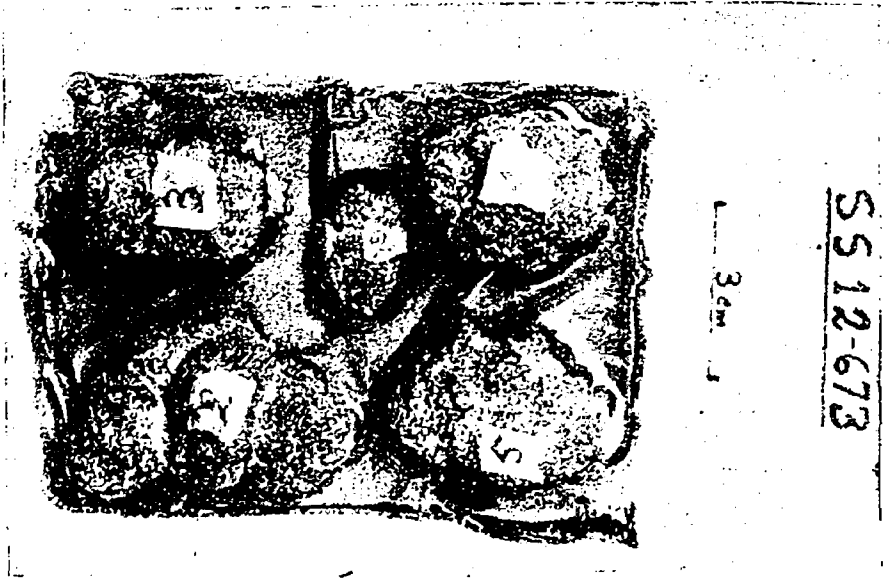


Figure 1.

Air-dried nodules are embedded in the resin using a hard paper box as cast.

mixing of reagents ensures viscous and unsolidified state of the mixture for at least 30 minutes. It is to be noted here that the mixing procedure should be done in a fume chamber and strict adherence to the above steps has to be maintained to obtain best results. This procedure has also been successfully adopted in mounting loose beach sands for mineral identification under ore-microscope.

#### References

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