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Cost Comparison of Sample Preparation for the Mineralogical Community - Primitive Techniques vs Advanced Mechanical Techniques

Tonžetić, I.Ž.¹

¹Indigo Research Laboratories, Ormonde View Estates, Nasrec Road, Johannesburg, igor.zeljko@gmail.com

The current economic crisis has not seen a lowering of cost with regards to the sample preparation (whether of labour, equipment or consumables) of polished sections or block mounts for use in the semi-automated scanning electron microscope - energy dispersive spectrometry (SEM-EDS) mineralogical/geological community (amongst others). This is peculiar since, at least in principle human beings are becoming more efficient at producing products and technologies (especially when these are inflation corrected). This study seeks to revisit and cost primitive techniques of sample preparation, against the background of contemporary advanced techniques, to see if and where cost savings can be made for the mineralogical/geological community (and also in the hope that distributors and makers of sample preparation equipment may revise their ideas on some of their pricing structures).

In particular, the following cost comparisons will be made:

- Grinding & polishing – Hardware store sand/corundum/carborundum paper sheets vs polishing/grinding machines and their cloths and laps
- Carbon coating – Graphite pencils vs vaporising carbon coaters
- Mounting media – Conventional everyday resins vs Commercial sample preparation resins
- Moulds – Freely available (often discarded) disposable 30mm capsule/pill holders vs conventional sample preparation moulds
- Labour – Internship style sample preparation technicians vs permanent sample preparation technicians
- Cutting/Slab making - Hardware store diamond coated discs and bench cutters vs high precision ultra-safe cutting machines

It will be shown that the following savings in South African Rands (ZAR) can be had per block made:

- Grinding & polishing – Primitive techniques ZAR 3.74 vs Advanced mechanical ZAR 46.01
- Carbon coating – Primitive techniques ZAR 0.0002 vs Advanced mechanical ZAR 0.42
- Mounting media – Primitive techniques ZAR 2.79 vs Advanced mechanical ZAR 22.85
- Moulds – Primitive techniques ZAR 0.00 (Free) vs Advanced mechanical ZAR 0.69
- Labour – Internship style ZAR 21.81 vs Permanent technicians ZAR 375.00
- Cutting/Slab making - Primitive techniques ZAR 2.12 vs Advanced mechanical ZAR 28.94

Ultimately, it will be shown that primitive techniques (whilst not necessarily implying a certain quality nor factoring in time taken to prepare the mounts) can produce block mounts at ZAR 30.45 whilst

contemporary advanced mechanical methods generally produce mounts at ZAR 444.96. By comparison to some laboratories that produce blocks at ZAR 165.00 – ZAR 367.00, that is a reduction in costs from between a factor of 5.42 and 12.05.

