The main advantage of pressed pellets is the speed. Indeed, a pellet can be prepared in only 10 minutes. However, several problems affect the quality of analytical results: particle size, mineralogical and segregation problems, surface roughness, and preferential orientation. Borate fusion eliminates those problems because the specimen is homogenous but it takes approximately 25 minutes to obtain a sample ready for analysis. Usually, a laboratory chooses a technique to the detriment of the other but this study shows how these sample preparation techniques can be used simultaneously to satisfy the majority of the analytical needs in a production laboratory.

The cement plant ‘Ciment Québec Inc.’ developed an interesting strategy in which the two sample preparation techniques are complementary to each other for the analysis of raw meals. Actually, certified reference materials (CRM) of pure oxides such as SiO₂, Al₂O₃, Fe₂O₃ etc. were used to make fused beads. These beads have equivalent compositions to many internal reference materials (IRM) of the raw meals. These artificial standards were used to build calibration curves for the bead specimens. Afterwards, the compositions of the IRM were used to build calibration curves for the pressed pellets specimens.

This study compares analytical results between bead and press pellet specimens for seven (7) IRM and one (1) unknown. Protocol modified methods estimate the repeatability and reproducibility of the two techniques. Finally, it is shown how an algorithm based on the Sherman equation can be used as a diagnosis tool for the development of fusion procedures.