RESULTS

Under each sectioning regime it was possible to differentiate between the Nacreous and Prismatic layers of the bivalve shell at all magnifications examined (Figs. 1,2,3,4,5,6).

Resolution is markedly increased in specimens that were broken by hand (Figs. 4,5,6) when compared to specimens that had been sectioned using a diamond saw. This resolution was maintained at increasing magnifications to 5000X.

A marked difference also existed in the detection of internal growth lines when examining specimens that had been broken by hand. This methodology could be easily applicable to studies investigating bivalve growth.

DISCUSSION & SUMMARY

The resolution obtained from specimens that had been broken by hand (Figs. 4,5,6) is markedly increased when compared to specimens that were sectioned using a Diamond Saw across all magnifications examined (Figs. 1,2,3). These differences can be attributed to sectioning artifacts resulting from the abrasive nature of the saw blade. Sectioning is a relatively prolonged process and increased contact with the diamond blade appears to have deteriorated the topographic structure of the Nacreous and Prismatic layers within the bivalve shell.

Common methodologies to examine internal shell structure using scanning electron microscopy have employed a diamond saw to section shells and subsequent polishing, etching, and coating have been used to enhance detail of the internal structure prior to high vacuum SEM imaging [1].

This investigation offers an alternative strategy to this methodology by breaking specimens by hand and imaging them under low vacuum SEM to reduce artifacts and presumably allow for a more accurate analysis of bivalve internal shell structure as they exist in nature. Time spent preparing specimens is also reduced as no drying or coating is required to examine specimens under Low Vacuum.

Internal growth rings were easily observed by breaking shells by hand (Figs. 7,8) and suggests that this methodology could be easily applicable to studies investigating bivalve growth.

LITERATURE CITED


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Dr. Mike Carroll, for sampling of bivalves

John Mohan, for access to the Isomet Diamond Saw

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