

# SCIENTIFIC REPORT

## Bifluorid 12 – Scanning Electron Microscopy

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**Fluoridation products should perform two key functions, in particular, in the dental practice: they should reliably seal exposed dentinal tubules (treatment of hypersensitivity), and they should also form calcium fluoride depots on the tooth surface, resulting in the long-term formation of fluoroapatite (prophylactic effect). The effectiveness of Bifluorid 12 in meeting these aims was examined in detail using scanning electron microscopy.<sup>[1]</sup>**

### Examination of surface structure using scanning electron microscopy

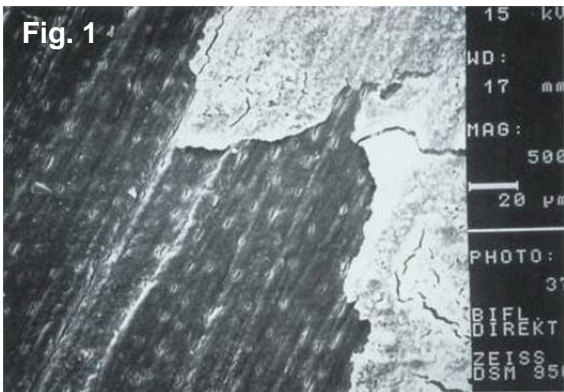


Fig. 1 opposite shows a dentine surface exposed by grinding processes during treatment. The openings of exposed dentinal tubules can clearly be seen on the left-hand side of the image. The aim of the treatment is to seal these tubules. In addition, the protective shield is restored by the deposition of calcium fluoride (as depicted on the right-hand side of the image).

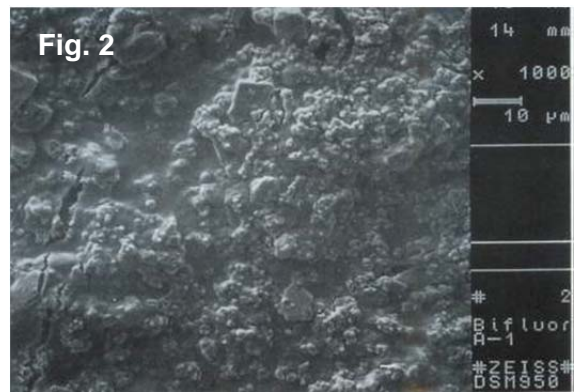
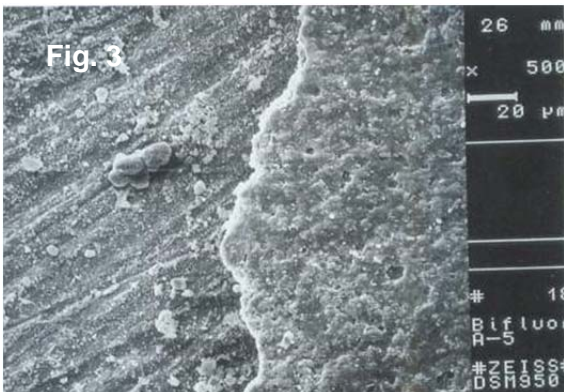
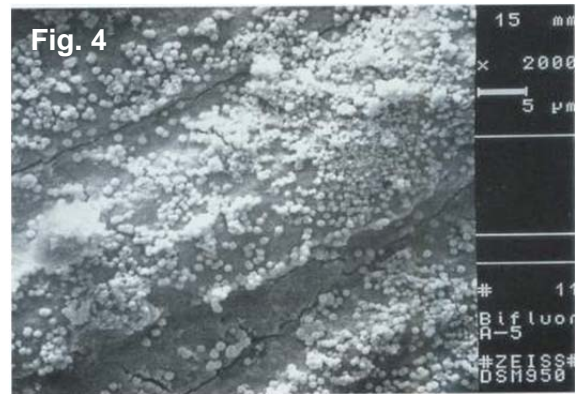


Fig. 2, which shows the situation after application of Bifluorid 12, highlights the excellent wetting properties of Bifluorid 12 – the varnish has covered the dentine evenly, leaving no areas uncovered.



After the carrier matrix (cellulose-based varnish) has been rinsed off, all that remains on the surface is substances not readily soluble in water. These mainly comprise calcium fluoride, which is present in the Bifluorid 12 and is also newly formed from calcium in the saliva and fluoride in the sodium fluoride. These deposits are the calcium fluoride depots referred to above.

Zooming in on the freshly treated surface (Fig. 3.) clearly shows how effectively the previously exposed dentinal tubules have been sealed. The freshly formed calcium fluoride globules also stand out particularly clearly. The long-term release of fluoride from these calcium fluoride depots results in the formation of fluoroapatite, thereby strengthening the tooth.



**Conclusion: By effectively sealing exposed dentinal tubules, Bifluorid 12 makes a substantial contribution to regenerating the calcium fluoride depots removed during treatment.**

[1] SEM images reproduced by kind permission of the University of Freiburg.