Journal of Chromatography, 209 (1981) 310–311
Elsevier Scientific Publishing Company, Amsterdam — Printed in The Netherlands

CHROM. 13,630

Note

Application of glass-lined stainless-steel columns in high-performance liquid chromatography

E. VON ARX
Chemical Research Laboratories, Pharmaceutical Division, Ciba-Geigy Limited, CH-4002 Basle (Switzerland)
(Received January 6th, 1981)

The introduction in 1976 of acidic systems for the separation of peptides[1] brought new technical problems. All of the stainless-steel columns used were found to have limited resistance to corrosion. For this reason a test series was started in our laboratories with 1/4-in. SGE glass-coated steel tubing of 3 and 4 mm I.D. (Scientific Glass Engineering, North Melbourne, Australia).

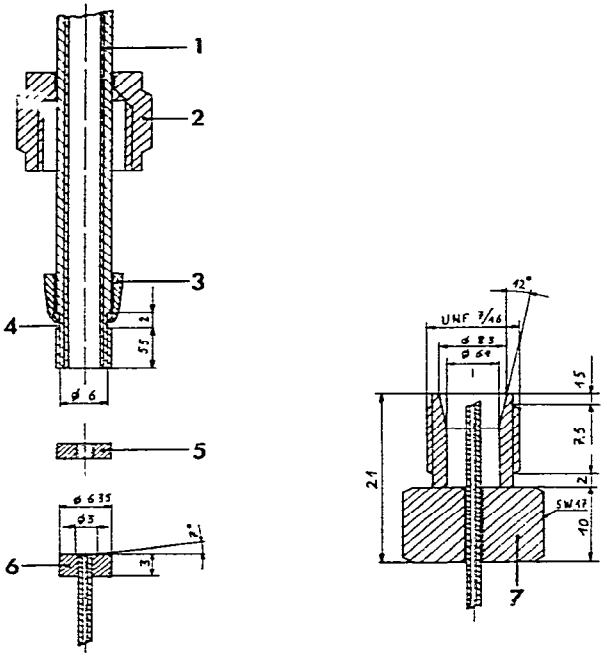

Fig. 1. 1 = SGE glass-lined metal tubing, 3 or 4 mm I.D.; 2 = 1/4-in. Parker nut; 3 = 1/4-in. Parker ferrule; 4 = 0.2-mm mortice; 5 = Altex AX 250-21 bed support; 6 = end fitting with 16-in. metal tubing, 0.25 mm I.D. (Argon welded seam); 7 = cap with a drilled hole of 1.8 mm I.D.; UNF 7/16 = unified thread of 7/16 in. All other dimensions are given in mm.

0021-9673/81/0000–0000/$02.50

Difficulties were encountered with the screw connections since the ferrules were found to slide on the smooth steel surface. To eliminate this handicap, grooves were milled into the steel tubing (Fig. 1). Simultaneously, a low dead-volume connection was developed. The ferrules 3 (Fig. 1) are pressed by 2 and 7 (bed support 5 is excluded) into the mortice 4.

These new columns have now been used for some time and offer the following advantages: corrosion resistance, reproducible packings, high permeability, low pressure and high efficiency by a factor of 1.5 in comparison to non-coated columns. Moreover, these columns are economic since lower amounts of packing material and solvents are needed with columns of 3 mm I.D. The results obtained with glass-lined stainless-steel columns are in good agreement with published data[2].

ACKNOWLEDGEMENTS

The author is grateful to Mr. K. Wagner for his valuable advice, and to Mr. R. Stoll for his technical assistance and for carefully carrying out a large number of chromatograms.

REFERENCES

1 E. von Arx and M. Faupel, *J. Chromatogr.*, 154 (1978) 68.
2 Gy. Vigh, E. Gémes and J. Inczédy, *J. Chromatogr.*, 147 (1978) 59.