

## NEW NANOSTRUCTURED MATERIALS BASED ELECTROCHEMICAL MICROSENSORS

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New nanostructured materials based on porphyrins are proposed for the design of microsensors. The porphyrins are forming molecular aggregates which favour the formation of nanochannels. The nanostructure of the porphyrins aggregates is shown using the atomic force microscopy. The size of the active surface of the microsensor proposed was determined using scanning electron microscopy.

The design of the proposed microelectrodes is simple and reliable. The porphyrin is the active compound which is physically immobilized in the diamond or carbon paste. The diamond paste electrodes are well known for their reliability, high S/N ratio and their high sensitivity [1-3].

The response characteristics of the microelectrodes were evaluated using DPV. The proposed microelectrodes were successfully used for the assay of dopamine and vitamin C in samples such as biological fluids, pharmaceutical compounds and beverages.

### References:

- [1] R.I. Stefan, S.G. Bairu, J.F. van Staden, *Anal.Lett.*, 36 (2003) 1493.
- [2] R.I. Stefan, S.G. Bairu, J.F. van Staden, *Anal.Bioanal.Chem.*, 375 (2003) 844.
- [3] R.I. Stefan, S.G. Bairu, *Anal.Chem.*, 75 (2003) 5394.