Level of Information Noise and Perspectives of Odour Assessing GC-NN System

Joanna Kośmider, Beata Krajewska

Technical University of Szczecin
Institute of Chemical Engineering and Environmental Protection Processes
Laboratory for Odour Quality of the Air
Ania Piasite 42, 71-065 Szczecin, Poland

e-mail: jkos@ps.pl  tel.: (+48)0914494519  fax.: (+48)0914494642

INTRODUCTION

AIM AND SCOPE OF THE RESEARCH

Perspectives of GC-NN method development depend on a trained network capabilities to eliminate information about odourless compounds (no-odour impact) present in an analysed sample and recorded in chromatographic data.

Effects of training neural networks prepared for determining odour intensity of acetone on the basis of information about its concentration in the air, delivered simultaneously with information about concentrations of several to twenty neutral odourless pollutants (information noise) were investigated.

311 individual odour intensity assessments of 24 air samples acetone (concentration of 110-16500 mg/m³) were collected.

Results tables were presented for 20 additional columns with 1 to 20 randomly chosen non-zero hypothetical concentrations of neutral pollutants.

RESULTS

The figures present differentiation of odour intensity assessments of an acetone sample in a group of 13 panelists (fig. a) and of all 24 analysed samples of acetone by five group of panelists.

POTENTIAL APPLICATIONS

When preparing a neural model enabling for odour intensity determining on the basis of various instrumental measurements, data sets consisting of results of direct sensory assessments and all instrumental data (significant and insignificant from odour point of view) can be used.

Training sets consisting of approximately 300 patterns (individual odour intensity assessments) are sufficient for preparing a network which correctly defilters one significant piece of information out of six insignificant ones.

It is planned to make trials of improving obtained network model quality by using opinions of a selected group of assessors or using a method of forward experimental data screening.

REFERENCES