

POWER LAW ESTIMATES OF ODOUR THRESHOLDS**M. Huotari, V. Lantto***University of Oulu, Department of Electrical and Information Engineering, Oulu, Finland*

In this work a power-law dependence was obtained for the action potential rate (pps, pulses per second), R , recorded from insect olfactory receptor neurons (ORN) vs. odour concentration in measurements with metal microelectrodes. The exposure odour concentration (ppm), c , at each exposure was estimated according to the discrete multiple headspace extraction and dilution (DMHED) method. The action potential rate (pps) R_i in i th odour exposure in a repeated exposure sequence was determined to follow a power law with an exponential decaying factor. The power-law exponent for ORNs of blowfly (*Calliphora vicina*) was determined to be 0.194 for 1-hexanol (HX), 0.323 for butyric acid (BA), and 0.064 for 1,4-diaminobutane (DAB). The odour threshold values were 0.01, 2.10 ppm, and $3.50 \cdot 10^{-12}$ ppm, respectively.