

## Selective detection of ethanolamine with doped silica films

Селективное определение этаноламина с помощью активированных пленок  
диоксида кремния

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Ethanolamine has wide industrial application. It is used as adsorbent in different processes of gas purification and separation. Sensitivity to ethanolamine ( $C_2H_7NO$ ) in air of composite nanostructured silica films was studied. Molybdenum containing polyoxometalates of the eighteen series were incorporated in silica films as additives. Polyoxometalates as catalysts of different redox processes can change of matrix's electrical properties.

Activated films were deposited by drop casting method on test structures with a pair of interdigital metal electrodes formed at their surface. The sensor's active area was 4.0 x 4.0 mm, and electrode gap was equal 0.08 mm. The method of hydrolytic polycondensation from tetraethyl orthosilicate solutions was used for films forming. The conditions of film formation varied during the tests. Films' electrical parameters were measured electronically in real-time mode.

Films had highly developed surface with value of 450 m<sup>2</sup>/g and nanoscale pores. Thickness of them was 0,2-0,3 μm. Addition of polyoxometalate into silica film resulted in stabilization of film's mass and changed markedly electrophysical characteristics. Availability of  $Mn_3P_2Mo_{18}O_{62}$  into silica film resulted in good sensitivity and selectivity to ethanolamine. With ethanolamine concentration changing from 0 to 100 ppm films' conductivity increased by 10-12 times. This process takes place at room temperature.