ivity improvement of a temperature – modulated resistive gas sensor using linear system identification methods

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Power ivity of resistive gas sensor improves by changing the operating temperature sensing and answers modeling by linear and nonlinear system adentification models. Linear modeling patterns can refferd to ARX, ARMAX and BOX-JEKINS models. In a gas detection system with a block modeling, use of several different gases at different concentrations as input of system and do to analyze those and gas identify through electronic fingerprint by applying heater voltage in the recorded period. Microheater in the series of sensors heats by applying voltage and couse a reaction of variable resistance in sensitive surface to gas. In addition inject several target gas inside the glass enclosure that presence of contaminants is determined by changing the resistance. As well as a time-varying waveform applied at different times to microheater. Recorded responses that are too high, should be transferred to the limited space that is obtain the general definition of them. Therefore, can be formed a matrix of data and modeled using linear models such as ARX, ARMAX and BOX-JENKINS. Finally according to the used model can be find several answers for each step and can recorded them in the relative matrix that each row is related to concentration of one of Gases. U(t) is inpute, Y(t) is output,e(t) is intered white noise, n is discipline of model and a_x، b_x، c_x are models parameters. In this regard top model is thinking that it does best ivity for separation of target gases.

Keywords : Feuture kay: resistive sensor, detecting models, electronic fingerprint , ARMAX, ARX and BOX-Jenkins.