

## Composite Coatings of Piezoelectric Quartz Sensors Based on Viscous Sorbents and Casein Micelles

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**Abstract :** The development of new sensitive coatings for sensors is one of the key directions in the development of sensor technologies. Recently, there has been a trend towards the creation of multicomponent coatings for sensors, which make it possible to increase the sensitivity, and specificity, and improve the performance properties of sensors. When analyzing samples with a complex matrix of biological origin, the inclusion of micelles of bioactive substances (amino and nucleic acids, peptides, proteins) in the composition of the sensor coating can also increase useful analytical information. The purpose of this work is to evaluate the analytical characteristics of composite coatings of piezoelectric quartz sensors based on medium-molecular viscous sorbents with incorporated micellar casein concentrate during the sorption of vapors of volatile organic compounds. The sorption properties of the coatings were studied by piezoelectric quartz microbalance. Macromolecular compounds (dicyclohexyl-18-crown-6, triton X-100, lanolin, micellar casein concentrate) were used as sorbents. Highly volatile organic compounds of various classes (alcohols, acids, aldehydes, esters) and water were selected as test substances. It has been established that composite coatings of sensors with the inclusion of micellar casein are more stable and selective to vapors of highly volatile compounds than to water vapors. The method and technique of forming a composite coating using molecular viscous sorbents do not affect the kinetic features of VOC sorption. When casein micelles are used, the features of kinetic sorption depend on the matrix of the coating.

**Keywords :** piezoquartz sensor, viscous sorbents, micellar casein, coating, volatile compounds

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