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Detection of Aldehydes Using Silver Mirror Reaction

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Attention has been recently focused on the harmful effects of aldehydes; hence, various laws regulate the use of most aldehydes. Therefore, a quick, easy, and continuously operating method of detecting aldehydes is required. In this study, we utilized the silver mirror reaction known as a specific reaction of aldehydes to detect aldehydes selectively. We performed the silver mirror reaction on a working electrode surface, and the reaction products which were deposited on the surface were measured by voltammetry. As a result, we could develop a simple measuring method of detecting aldehydes quickly that could distinguish aldehydes from ketones. In addition, we configured the measurement conditions to make the continuous measurement of aldehydes possible. We brought together the reaction field and electrolysis cell, optimized the supporting electrolyte and the mixing ratio of diamine silver ions of ammoniacal silver nitride solution, and improved the controlling sequence of the voltage applied to the working electrode. Consequently, we could continuously measure the level of aldehydes.

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