# Thiazole–based PVC membrane potentiometric ion–selective sensors

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| **ABSTRACT**  Ion–selective electrodes (ISEs) offer versatile advantages including wide linear concentration range, low detection limit, low cost, short response time, high selectivity, long lifetime, ease of preparation and use [1–3]. Undoubtedly, the most important component of ion–selective electrodes is the ionophores that enable interaction with the analyte ion [4]. In this study, we investigated the ionophore properties of 2-acetamido-4-(2-hydroxyphenyl)thiazole (**T1**), 2-amino-4-(trifluoromethyl)thiazole-5-carboxylic acid (**T2**) and ethyl 2-amino-4,5,6,7-tetrahydrobenzo[d]thiazole-6-carboxylate (**T3**). It was determined that the potentiometric performance characteristics of the sensors prepared with **T1** were superior to **T2** and **T3**. The new ion–selective sensors, which exhibit a highly selective behavior towards copper(II) ions, exhibited a low limit of detection over a wide concentration range. The developed sensor had fast response time (5s), wide pH working range (5.0–9.0), good repeatability and stability. Finally, this novel sensor was applied for the direct determination of copper(II) ions in different water samples.  **Acknowledgments**  The authors are indebted to the Tokat Gaziosmanpasa University, Scientific Research Projects Commission (Project Number: 2022/83).  **References:**   1. Özbek, O., & Ölcenoglu, A. (2023). The use of bis–thiadiazole and bis–oxadiazol derivatives as ionophores: A novel copper (II)–selective potentiometric electrodes. Microchemical Journal, 190, 108679. 2. Özbek, O. (2023). A potentiometric sensor for the determination of potassium in different baby follow–on milk, water, juice and pharmaceutical samples. Journal of Food Composition and Analysis, 115, 104937. 3. Özbek, O., & Isildak, Ö. (2022). Potentiometric determination of copper (II) ions based on a porphyrin derivative. Journal of the Chinese Chemical Society, 69(7), 1060-1069. 4. Özbek, O., Çetin, A., Koç, E., & Isildak, Ö. (2022). Synthesis and sensor properties of a phenol derivative molecule: potentiometric determination of silver (I) ions. Electrocatalysis, 13(4), 486-493. |

# Keywords: Thiazole, sensor, potentiometry, copper(II), heavy metal.