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United Arab Emirates University

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### Master Thesis Defense

Entitled

*CHEMICAL EQUILIBRIUM MISCONCEPTIONS AMONG 12TH GRADE STUDENTS IN AL AIN  
PRIVATE SCHOOLS*

by

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Abstract

The purpose of this study was to assess student's understanding of chemical equilibrium related to four main concepts: the equilibrium constant, approach to equilibrium, heterogeneous equilibrium systems, and Le-Chatelier principle. The nature of misconceptions was also identified across gender within the context of the United Arab Emirates (UAE). For this purpose, the Test to Identify Students' Alternative Conceptions (TISAC) was administered to collect data that consisted of two-tier multiple choice questions. The data was gathered from 206 12<sup>th</sup> grade students. Among the participants, there were 122 female students and 84 male students at three private schools in Al-Ain city. The TISAC was administered. Descriptive statistics and t-test analyses were done. Overall, the findings showed that students had different levels of understanding related to chemical equilibrium. The findings also indicated a number of misconceptions that were held by 12<sup>th</sup> grade students for both gender. The findings highlighted the common misconceptions in each concept of chemical equilibrium that could help educators to minimize the difficulties of chemical equilibrium. This study also showed that there was no statistical significant difference across gender related to misconceptions of chemical equilibrium. This study provided recommendations that related to the students' misconceptions about chemical equilibrium for policy makers, curriculum developers, science and chemistry teachers and school administration. There were included some recommendations for farther researches to overcome all of these misconceptions.

**Keywords:** misconceptions, chemical equilibrium, 12th grade, Al-Ain, UAE.