

treatment approaches, there are still some slight discrepancies indicating that the Al-Ti electrode arrangement outperformed the Ti-Al electrode arrangement for most of the water quality parameters except for chromium and nickel; whereby, the removal efficiencies Ti-Al polarity had a little higher removal efficiencies from chromium and nickel.

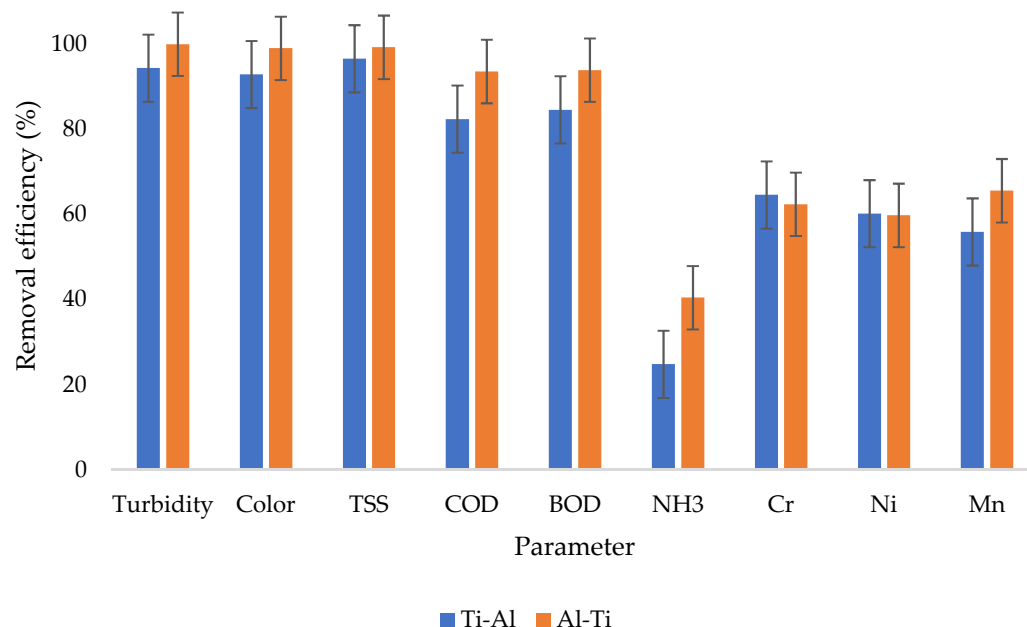


Figure 6. Removal efficiencies from 20 min retention time.

Moreover, a *t*-test (Two-Sample Assuming Equal Variances) analysis was performed to compare the concentrations of each water quality parameter from the two treatment approaches. From the analysis results, it was observed that the *p*-values for turbidity (0.0089), TSS (0.0144), COD (0.0424), ammonia (0.0258), manganese (0.0226) color (0.0094), BOD (0.0114), chromium (0.0246) were less than 0.05; a phenomenon that rejects the null hypothesis, and justify that the data means were different. However, for nickel; the *p*-value (0.1685) was higher than 0.05, failing to reject the null hypothesis.

2.4.2. Hydraulic Retention Time—40 min

Figure 7 presents the results from 40 min retention time; shows that the two electrode arrangements were highly effective in terms of pollutants removal, with up to 100% removal efficiency achieved from turbidity when the wastewater was subjected to the Al-Ti electrode arrangement, as well as up to 99.95% removal efficiency when the wastewater was subjected to the Ti-Al electrode combination. Very high removal efficiencies can also be observed from color, TSS, COD, BOD, Cr, Ni, and Mn. A little challenge in terms of removal efficiency for both electrode arrangements can be observed, marking the lowest removal efficiencies from the investigation. In the literature, the EC treatment methods have also been observed to be highly effective in the removal of pollutants such as COD in other types of wastewaters. For instance, according to the study conducted by Chopra and Sharma [37], which investigated the effect of EC purification on the COD removal from biologically treated municipal wastewater, up to 85.8% removal efficiency was achieved. Generally, from the removal efficiencies, the Al-Ti electrode arrangement performed slightly higher than the Ti-Al arrangement, except for manganese.

From *t*-test (Two-Sample Assuming Equal Variances) analysis results, the *p*-values for turbidity (0.0136), TSS (0.0208), COD (0.0223), ammonia (0.0119), and manganese (0.0399) were less than 0.05; a phenomenon that rejects the null hypothesis, and justify that the data means were different. However, for color, BOD, chromium, and nickel; the *p*-values were higher than 0.05, failing to reject the null hypothesis.