

Figure 5: Effect of Initial Concentration (Current Density=58.60mA/cm², Time=100mins, pH=7)

3.4 Effect of time at Optimum Condition

Chromium removal increases along with time. However the rate of increase in chromium removal goes on decreasing as the time increases. 91% of chromium was removed in the first 100 mins. The removal percentage increased from 91% to 96% in the next 100 mins.[3][7][20]

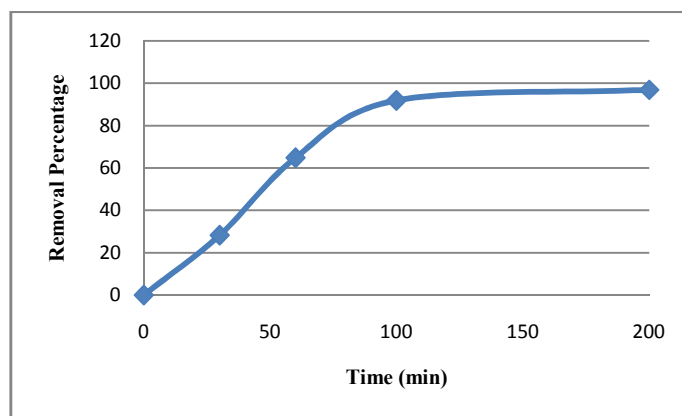


Figure 5: (Current Density=58.60mA/cm², Time=100mins, pH=7)

4. Conclusion

Chromium removal from synthetic wastewater was carried out using Electrocoagulation. Parameters like current density, pH, initial concentration and time were studied to get the optimum value. The results showed that the optimized removal efficiency of 96.89% was achieved at an optimum current density of 58.60 mA/cm² and a pH of 7.0 using aluminum electrodes. The aluminum hydroxide generated in the cell removes the chromium present in the water. At elevated pH, the removal of chromium is higher due to simultaneous co-precipitation and chemical precipitation. This effect is observed till the pH is increased to 7 and the percentage removal starts decreasing beyond that point. The treatment rate was found to increase upon increasing the current density from a range of 14.7-58.60mA/cm². Also, increasing the operating time from 20 to 100min further enhanced the removal of chromium (VI) and combined with optimum pH and current density, the percentage removal is highest.

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