Summary

This thesis deals with the treatment and conservation of outdoor historical bronze statues. It is divided into six chapters as follows:

Chapter one: Deals with different bronze alloys which are used in making outsized statues, and deals with methods and stages of their manufacture by sand casting and lost wax casting.

Chapter two: focuses on the numerous factors threatening the permanence of outdoor bronze statues. Deterioration factors are divided into Endogenous factors and Exogenous factors. Both categories directly influence the corrosion rate of this type of statues in a negative way.

Chapter three: Includes a case study of a deteriorated bronze statue of Soliman Pasha Al-Fransawy using available, particularly non-destructive, examination and analysis techniques in order to evaluate the selected statue state of preservation and identify the main causes of damage.

Chapter four: Contains of a study to detect and measure the ratio of air pollutants in the atmosphere surrounding the statue of Soliman Pasha Al-Fransawy as well as measuring the temperature, relative humidity levels and dew point.

Chapter five: is an experimental study in the field and a laboratory study to evaluate the materials used in the treatment and conservation of outdoor bronze statues., weight Change test, color change test and electrochemical testing were used to assess the efficiency of the tested materials; and thus select the materials more appropriate to use for outdoor bronze statues.

Chapter six: includes a practical application of effective conservation materials and treatments appropriate to use for outdoor bronze statues based on the results of the previous experimental study. The case study selected in this research is the outsized bronze statue of Soliman Pasha Al-Fransawy which adorns the front yard of the military museum, located at the Citadel of Salah El-din in Cairo.

The research ends with general discussion and final results as well as recommendations regarding the protection of outdoor bronze statues.