Preface

More than 99% of the visible matter in the universe is in the plasma state where it forms the basis of a wide variety of objects and phenomena. This richness of the fourth aggregation state of matter is especially reflected in the wide diversity in plasma transport processes. Transport of particles such as electrons, ions, molecules and radicals and transport of energy, like heat, radiation, ordered and chaotic kinetic energy and internal energy of particles. Transport from one plasma part to the other but also between the plasma and imbedded particulates or between the plasma and the boundary (wall).
In some cases the transport may be described by relatively simple hydrodynamics, in other cases effects of electric and magnetic fields are dominant, while in special situations even a full magneto hydrodynamic treatment taking turbulence on all kind of levels into account, does not lead to a proper understanding of the phenomena.

It is obvious that a fruitful condition is created when experts on the various fields are brought together in order to exchange knowledge as obtained by observational, experimental and theoretical studies. A part from giving scientific satisfaction this will contribute to the insight of plasma engineering problems as well.

This book is the result of the first international symposium on heat and mass transfer under plasma conditions held in Cesme, Turkey July 4-8 1994. The purpose of the symposium was :

- to provide an opportunity for scientists and engineers to present the state-of-the-art,
- to promote exchange of knowledge between experts in the various fields,
- to discuss current problems and research needs.

The program covered novel approaches and recent developments in plasma fundamentals and applications. All speakers were invited. Seventy participants out of twenty countries were present. The presentations were grouped under seven topics each beginning with keynote lectures. The topics discussed were :

1) Plasma Modeling and Characterization (Turbulence, Radiation, EM flow effect).
2) Diagnostic Techniques in Plasma Chemical Applications.
3) Dusty Plasmas and Plasma-Particle Interactions.
4) Plasma-Surface Interactions (Plasma-wall boundary layers, Solid body heating).
5) Non-Equilibrium Effects in Thermal Plasma Systems.
6) Film and Coating Growth (Particulate Nucleation and Rapid Solidification).
7) New branches of Plasma Science and Transport Phenomena.

The organization of this conference would not have been possible without the valuable contribution of Professor Arinç, Chairman of the local organizing committee to whom we are particularly indebted. We would also like to thank all members of the local organizing committee for their efforts and dedication which contributed to the success of this conference. Thanks are due to the Middle East Technical University, Ankara, Turkey and the Scientific and Technical Research Council of Turkey for sponsoring the symposium. We will all cherish the memories of the good time spent together during this week and look forward to meet again at the occasion of the next meeting .