

Preface

This volume of Journal of Physics: Conference Series contains contributions by participants in an International Atomic Energy Agency (IAEA) Coordinated Research Project (CRP) on “Light element atom, molecule and radical behaviour in the divertor and edge plasma regions” (in magnetic fusion devices). Light elements are the dominant impurity species in fusion experiments and in the near-wall plasma they occur as atoms or ions and also as hydrides and other molecules and molecular ions. Hydrogen (H or D, and T in a reactor) is the dominant species in fusion experiments, but all light elements He - O and Ne are of interest for various reasons. Helium is a product of the D+T fusion reaction and is introduced in experiments for transport studies. Lithium is used for wall coating and also as a beam diagnostic material. Beryllium is foreseen as a wall material for the ITER experiment and is used on the Joint European Torus (JET) experiment. Boron may be used as a coating material for the vessel walls. Carbon (graphite or carbon-fiber composite) is often used as the target material for wall regions subject to high heat load. Nitrogen may be used as a buffer gas for edge plasma cooling. Oxygen is a common impurity in experiments due to residual water vapor. Finally, neon is another choice as a buffer gas. Data for collisional and radiative processes involving these species are important for plasma modelling and for diagnostics.

The participants in the CRP met 3 times over the years 2009-2013 for a research coordination meeting. Reports and presentation materials for these meetings are available through the web page on coordinated research projects of the (IAEA) Atomic and Molecular Data Unit [1]. Some of the numerical data generated in the course of the CRP is available through the ALADDIN database [2].

The IAEA takes the opportunity to thank the participants in the CRP for their dedicated efforts in the course of the CRP and for their contributions to this volume. The IAEA scientific officers for this project were Mr Bastiaan J. Braams and Ms Hyun-Kyung Chung.

[1] See: <https://www-amdis.iaea.org/CRP/>.

[2] See: <https://www-amdis.iaea.org/ALADDIN/>.

