Atomic and Molecular Data for Plasma Technology-Challenges and Opportunities

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Control of plasma processing methodologies can only occur by obtaining a thorough understanding of the physical and chemical properties of plasmas. However, all plasma processes are currently used in the industry with an incomplete understanding of the coupled chemical and physical properties of the plasma involved. Only a more comprehensive understanding of such processes will allow models of such plasmas to be constructed that in turn can be used to design the next generation of plasma reactors. Developing such models and gaining a detailed understanding of the physical and chemical mechanisms within plasma systems is intricately linked to our knowledge of the key interactions within the plasma and thus the status of the database for characterizing electron, ion and photon interactions with those atomic and molecular species within the plasma and knowledge of both the cross-sections and reaction rates for such collisions, both in the gaseous phase and on the surfaces of the plasma reactor. Thus, in this talk, we will discuss about the current status of data research and development for low temperature plasma applications in the international plasma community.