Dynamic investigation of Li-plasma interaction next to the Li-coating divertor plate

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Application of Lithium (Li) has been applied in many fusion devices, such as Li wall conditioning and Li pellet injection. Liquid Li divertor is also a promising concept. Thus, lithium compatibility with tokamak plasma becomes an important issue. Hence, a rigorous quantitative analysis of Li-plasma interactions in the edge plasma is needed. In this work, we dynamically study the effects of Li coating divertor target how on typical background H-mode edge plasma by 1D3V Particle-In-Cell simulation. Deuterium plasma is defined between two Li divertor target plates and the whole simulation domain is projected to characterize the scrape off layer. Great deal of neutral Li impurities are generated from the Li target as a result of sputtering or evaporation due to impact of deuterium ions and form a neutral cloud, which can radiate a great amount of incident heat flux. In addition, particle recycling and secondary electron emission from the divertor plate have also been considered. The work is now going under way. Detailed results and discussion will be presented in the coming submitted paper.

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