Behaviors of Impurity in ITER using BALDUR code

W. Buangam\textsuperscript{1}, B. Chatthong\textsuperscript{1}, T. Onjun\textsuperscript{1}, N. Poolyarat\textsuperscript{2} and R. Picha\textsuperscript{3}

\textsuperscript{1}Sirindhorn International Institute of Technology, TU, Pathumthani, Thailand
\textsuperscript{2}Department of Physics, Thammasat University, Pathumthani, Thailand
\textsuperscript{3}Thailand Institute of Nuclear Technology, Bangkok, Thailand

The behaviors of impurity in ITER are investigated using 1.5D BALDUR integrated predictive modeling code. Deuterium, tritium, and two species of impurity are considered as plasma in all simulations, where helium is considered as one of the impurities. Another impurity can be lithium, beryllium, carbon, nitrogen, oxygen, or neon. For each simulation, the transport of plasma and impurities are calculated using a linear combination of MMM95 anomalous transport and NCLASS neoclassical transport. It is found that the impurity density and helium density rise and reach steady-state values in all scenarios. However, impurity and helium density in neon scenario appear to reach a steady state faster than the other impurities. The impurity density, helium density and temperature in a steady state decrease with an atomic number of impurity. On the other hand, the radiative loss and impurity transport in a steady state increase with an atomic number of impurity. Moreover, it is also found that the kinetic-balloonning term (KB) provides the largest contribution in the center of the plasma, the ITG term (ITG) provides the largest contribution in the region close to the center and the resistive balloonning contribution term (RB) provides the largest contribution near the edge of the plasma in all scenarios.