Pre-ionization method using non-resonant 2.45 GHz microwave ($P_{2.45\text{GHz}} < 20\text{ kW}$) enables us to achieve NBI plasma start-up in helical systems even in low $P_{\text{NB}}$ ($\sim$0.3MW) and without $\omega_{ce}$ conditions.

Three essential mechanisms
1. Production of high energy electrons by stochastic acceleration
2. Formed seed plasma with $n_e$ of $10^{17}$~$10^{18}\text{ m}^{-3}$ in non-resonant heating
3. Fast ions in early phase of NBI heats electrons overcoming power loss (ionization, conduction), resulting rapid burn-through of low Z impurity.