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Nanoparticle Injection for Disruption Diagnostics and Mitigation[1] I.N. BOGATU, L. ZHAO, FAR-TECH, Inc. — Diagnostics/mitigation of runaway electrons (REs) and thermal quench (TQ) can benefit from maximized assimilation fraction. Nanoparticles (NPs) have large specific surface area, up to hundreds of m^2/g. NPs may be injected into tokamak via plasma jet (NPPJ) or by dispersive shell pellet (NPDSP). Once injected into tokamak plasma, NPs undergo fragmentation or ablative sublimation, depending on the species. We developed models for these processes and implemented them into the in-house Hybrid Electro-Magnetic code HEM-2D. We currently investigate the following NPs: 1) C_{60} (suited for CFC tokamaks), including multiply charged C_{60} ions by high intensity UV/EUV flux photoionization, and 2) ITER-compatible boron nitride (BN) NPs. We report simulation results for NPPJ penetration and mass delivery from fragmenting C_{60} and sublimating BN NPs.

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