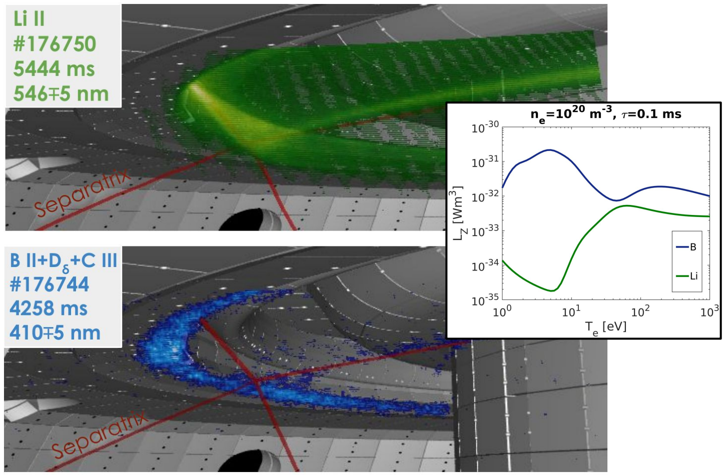
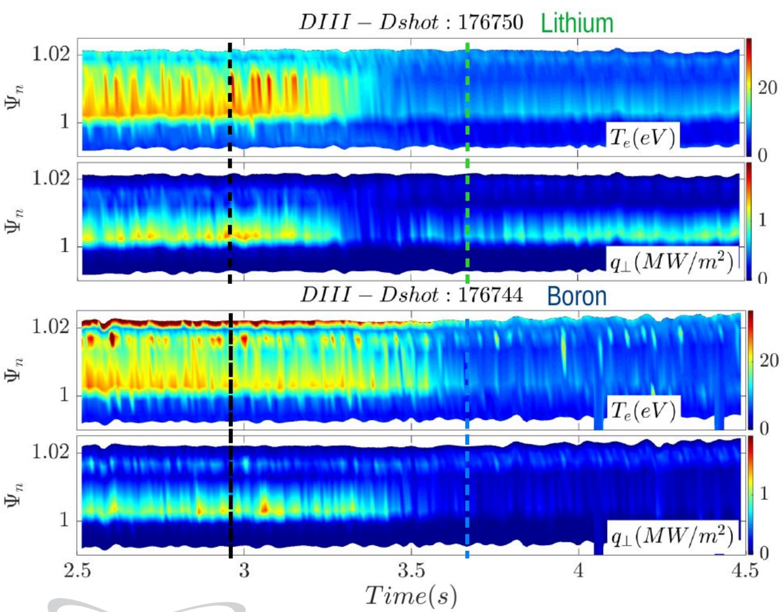
Enhanced radiative divertor power exhaust through injection of low-Z powders in DIII-D





Low Z powder-assisted divertor dissipation

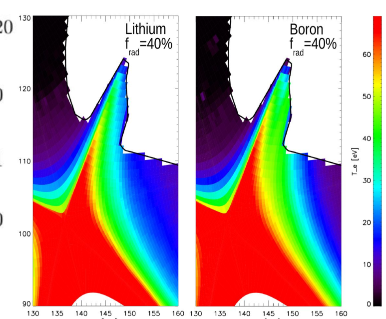
- Enables use of alternative impurity species: B, Li (, Be, Si, BN, ...)
- Near-target neutral pressure increased by a factor up to 3, rapid reduction of the divertor Te and $q_\perp$ for lithium and boron, respectively;
- Boron nitride reduces ELM activity

Core-edge capability

- Low Z powders create dissipative divertor & detachment while plasma energy confinement is maintained

Camera data and modeling

- Species-dependent dissipation in near SOL (Li) and attached to targets (B)



-> Synergistic use of low Z powders promising to optimize divertor dissipation and PMI

feffenbe@pppl.gov

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Authors & Acknowledgements

<u>Florian Effenberg</u>, A. Bortolon, L. Casali[a], R. Lunsford, I. Bykov[a], H.Q. Wang[a], F. Scotti[b], M. Fenstermacher[b], H. Frerichs[c], J.D. Lore[d], A. Nagy, Y. Feng[e], B.A. Grierson, F. Laggner, R. Maingi, R. Nazikian, D. Thomas[a], DIII-D Team

PPPL, [a]GA, [b]LLNL, [c]UW, [d]ORNL, [e]IPP

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