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## High Power Targets for Accelerator Based Research Facilities

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Target designs used in accelerator facilities that serve to produce useful particles for physics or materials research are being pushed to accept increasing levels of beam power to enable new regimes of study. The field of high power targets spans a range of applications, including neutron sources, neutrino factories, radioactive ion beams sources, isotope production and materials irradiation test facilities. They operate with continuous or pulsed beams. “High power” broadly refers to high volume power density or volume energy density per pulse, or simply high time-averaged power. In addition to achieving efficient production of the desired particles, common challenges to the engineers in the high power target community include meeting facility requirements for duty cycle and target lifetime, removal of deposited beam heating, management of thermal stress and thermal shock effects, dealing with radiation damage effects on target thermo-physical properties, and satisfying safety and waste regulations. These demands have led to some novel target designs and concepts such as liquid metals, rotating solids, flowing metal powder or granular targets. A review of high-powered targets – operating and in development – will be presented. The High Power Targetry Workshop takes place at Fermilab this May with participants from the full spectrum of applications; highlights from that workshop will also be covered.

### Summary

**Primary author(s) :** Mr. RIEMER, Bernard (Oak Ridge National Laboratory)

**Presenter(s) :** Mr. RIEMER, Bernard (Oak Ridge National Laboratory)

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