LA-UR- 03-3171

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Title: GRAIN REFINEMENT IN BERYLLIUM BY EQUAL CHANNEL ANGULAR EXTRUSION

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Submitted to: To be presented at 15th Target Fabrication Specialists Meeting, Gleneden Beach, Oregon, June 1-5, 2003

Abstract for 15th Target Fabrication Specialists Meeting, Gleneden Beach, Oregon, June 1-5, 2003

Grain Refinement in Beryllium by Equal Channel Angular Extrusion

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Ultrafine-grained Be is the material of choice for fabrication of the NIF target capsules. One method of producing ultrafine grains in metals is by imposing very large strains. Equal channel angular extrusion (ECAE) has been used to achieve these high strains. Previous work has shown that powder-source Be can be successfully processed by ECAE. Pure Be and Be-0.9 at% Cu alloys have been arc melted and cast into billets 5 mm in diameter by 30 mm in length. These billets were enclosed in cans fabricated from commercial purity Ni, with an electron-beam welded end plug. These cans were extruded at 425°C in ECAE tooling with a 120° angle between the inlet and outlet channels. The billets were extruded up to 4 times. The microstructures of the powder-source Be and the arc-melted Be and Be-0.9 at% Cu materials will be presented, and the effects of the ECAE processing on the grain size will be discussed.