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Bulk nanostructured alloys by large strain extrusion machining WILFREDO MOSCOSO, CHRISTOPHER SALDANA, JON MADARIAGA, Purdue University, RAVI SHANKAR, University of Pittsburgh, SRINIVASAN CHANDRASEKAR, DALE COMPTON, Purdue University — Large strain extrusion machining (LSEM) is presented as a method of severe plastic deformation for the creation of bulk nanostructured materials in a wide range of metal alloys. This method combines inherent advantages afforded by large strain deformation in chip formation by machining, with simultaneous dimensional control of extrusion in a single step of deformation. Bulk nanostructured materials in the form of foils, plates, and bars of controlled dimensions are shown to result by appropriately controlling the geometric parameters of the deformation in large strain extrusion machining.

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