



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: **PROCESS OF STACKING AND MELTING POLYCRYSTALLINE SILICON FOR HIGH QUALITY SINGLE CRYSTAL PRODUCTION**

## (57) Abstract

An improved process for forming a single crystal silicon ingot from solid, varying sized chunks of polycrystalline silicon source material according to the Czochralski method. The process includes classifying each chunk of source material by size, placing chunks of source material into a crucible to form a stack in the crucible. The chunks are generally placed within at least three regions of the crucible that are pre-selected according to the size classifications of the chunks. The stack within the crucible is melted in an inert environment at an elevated temperature to form a source melt, and the temperature of the crucible and the source melt is stabilized to an equilibrium level suitable for crystal growth. The single crystal silicon ingot is pulled from the source melt according to the Czochralski method. In another aspect, the step of melting the stack is taken while the crucible has an ambient pressure that is greater than an ambient pressure when the step of stabilizing the temperature is taken.

