

Development of 420 mm Diameter Silicon Crystal Growth Using Continuous Czochralski Process

Authors : Ilsun Pang, Kwanghun Kim, Sungsun Baik

Abstract : Large diameter Si wafer is used as semiconductor substrate. Large diameter Si crystal ingot should be needed in order to increase wafer size. To make convection of large silicon melt stable, magnetic field is normally applied, but magnetic field is expensive and it is not proper to stabilize the large Si melt. To solve the problem, we propose a continuous Czochralski process which can be applied to small melt without magnetic field. We used granule poly, which has size distribution of 1~3 mm and is easily supplied in double crucible during silicon ingot growth. As the result, we produced 420 mm diameter ingot. In this paper, we describe an experimental study on crystal growth of large diameter silicon by Continuous Czochralski process.

Keywords : Czochralski, ingot, silicon crystal, wafer

Conference Title : ICCME 2015 : International Conference on Chemical and Materials Engineering

Conference Location : Rome, Italy

Conference Dates : May 05-06, 2015