

# Accepted Manuscript

A lifetime of contributions to the world of semiconductors using the Czochralski invention

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PII: S0042-207X(16)30963-0

DOI: [10.1016/j.vacuum.2017.01.009](https://doi.org/10.1016/j.vacuum.2017.01.009)

Reference: VAC 7277

To appear in: *Vacuum*

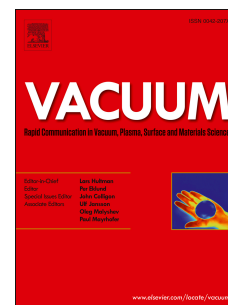
Received Date: 19 December 2016

Revised Date: 10 January 2017

Accepted Date: 12 January 2017

Please cite this article as: Razeghi M, A lifetime of contributions to the world of semiconductors using the Czochralski invention, *Vacuum* (2017), doi: 10.1016/j.vacuum.2017.01.009.

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# **A Lifetime of Contributions to the World of Semiconductors Using the Czochralski Invention**

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## **Abstract**

Over the course of my career, I have made numerous contributions related to semiconductor crystal growth and high performance optoelectronics over a vast region of the electromagnetic spectrum (ultraviolet to terahertz). In 2016 this cumulated in my receiving the Jan Czochralski Gold Medal award from the European Materials Research Society. This article is designed to provide a historical perspective and general overview of these scientific achievements, on the occasion of being honored by this award. These achievements would not have been possible without high quality crystalline substrates, and this article is written in honor of Jan Czochralski on the 100<sup>th</sup> anniversary of his important discovery.

## **1 Introduction**

We are living in an unprecedented era of hyper-connectivity that is redefining our societies and cultures. And this has only just begun.

The internet has become the ubiquitous cloud that is connecting every aspect of our daily lives, including data collection, search engines, e-commerce, and remote devices. This cloud is

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