

Abstract Submitted
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On the logarithmic-normal distribution in nucleation and growth processes ANDREAS BILL, ANTHONY TERAN, California State University Long Beach, Dept. of Physics & Astronomy, Long Beach, CA 90840-3901, RALF B. BERGMANN, Robert Bosch GmbH, Automotive Electronics, Quality Management Suppliers, Physical Analysis, P.O.Box 1342, 72703 Reutlingen, Germany — The logarithmic-normal (lognormal) distribution is one of the most frequently observed distributions in nature and describes a large number of physical, biological and even sociological phenomena. However, a derivation of this distribution from first principles is lacking. We propose a differential equation governing the time development of grain size distribution in random nucleation and growth processes. The solution of this equation provides an analytical derivation of size distributions that has a form of the lognormal type. The resulting expression is used to discuss the grain size distribution of solid phase crystallized Si-films.

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