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Surface Ventures: What Exponential Growth of Technology Means for Protective and Tribological Coatings

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Knowledge grows exponentially. The more we know, the greater our ability to learn and the faster we expand our knowledge base. The growth of knowledge fuels the growth of technology, with each new scientific discovery becoming a tool with which novel technologies are invented. It might be difficult to appreciate and accept the fact of exponential growth, as human perception is linear. Our brains have linear expectations, because that has always been the case. However, it has been postulated, that we are currently “on the knee” of the exponential growth of technology curve. As a result, technology progresses so fast, that the past no longer looks like the present, and the present is nowhere near how the future will look like. Materials science will play a key role in enabling future technologies, and we are in the midst of a materials science revolution that will impact every industry. Today, materials scientists are engineering smart, novel materials and functional surfaces with advanced properties well beyond state-of-the-art. Novel materials mean breakthrough opportunities in medicine, energy generation, transportation, consumer electronics, and high value manufacturing. This perspective talk will discuss the current opportunities and future challenges for the protective and tribological coatings in the context of exponential growth of technology.

Keywords

functional coatings

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responsive surfaces

exponential growth