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Abstract for an Invited Paper
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Developing Single-Wall Carbon Nanotubes into an Industrial Material through the Super-Growth CVD Method¹
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Since the discovery of the carbon nanotube (CNT) 20 years ago, extensive effort has been made to utilize their exceptional intrinsic properties toward industrial applications. However, availability has significantly thwarted these endeavors. In one section of my presentation, I will describe our efforts toward the economical mass-production of single-walled carbon nanotubes (SWCNT) based on the water-assisted chemical vapor deposition technique, from which highly efficient synthesis of vertically aligned SWCNTs grow from substrates (SWCNT forests). Further, I will discuss our work to promote the industrial use of SWCNTs as a member of the Technology Research Association for Single-Walled Carbon Nanotubes (TASC) (A consortium of five companies and AIST founded for the specific purpose of developing SWCNT industrial technology.) Specifically, I will present our progress on developing the technology for the synthetic control of SWCNTs and the development of standardized evaluation techniques for the purpose of understanding the relationship between the SWCNT forest structure, e.g. length, density, crystallinity, etc and the targeted property, e.g. conductivity, mechanical reinforcement, etc. Finally, I will present several examples of applications from composites to CNT-based devices.

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