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**Advances in
Nanotechnology and
its Applications**

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ADVANCES IN NANOTECHNOLOGY & ITS APPLICATION

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CHAPTER 1

Application of Nanofluids as Coolants in Radiator

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Introduction

Downsizing has become a new trend in the world of science and technology. Nanotechnology and Micro/Nano electromechanical systems (MEMS/NEMS) technology are rapidly emerging and developing as the new revolution in miniaturization, which is strongly interdisciplinary. For example, miniature heat exchangers have numerous attributes, including high thermal effectiveness, high heat transfer surface-to volume ratio, small size, low weight, low fluid inventory and design flexibility.

Nanoparticles are now easily produced using modern material technology with sizes less than 100 nm. These nanoparticles have different mechanical, electrical, thermal and optical properties compared to their parent material. The stable suspension of these nanoparticles in conventional base fluids is known as nanofluid, which was first coined by Choi (1995) at the Argonne National Laboratory (ANL), Chicago. Since the development of the concept of nanofluids, many scientists and researchers all over the world have made many scientific breakthroughs in the development of unexpected thermal properties enhancement and also studied and proposed new mechanisms behind enhanced thermal properties of nanofluids. Previous researchers (Heris et al., 2007) have shown that the increase of nanoparticle concentration in nanofluids appears to enhance the heat transfer rate.