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Editorial

Mathematical and Computational Analyses of Flow and Transport Phenomena

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1. Introduction

In this special issue, a number of papers have been accepted for publication. The special issue concerns with theoretical investigation and mathematical analysis that are very important for all scientific, engineering, and environmental applications. From mathematical modeling to computational analysis and all the way to developing analytical and numerical solutions, studying solutions properties, and so forth, the theoretical, mathematical, and computational analyses are indispensable bases. Rapid progress has been seen in the analysis of flow and transport phenomena especially in the recent years because of the significance of flow and transport to science and engineering.

2. Overview of Work Presented in This Special Issue

The list of papers published in this issue covers a wide range of applications using different approaches and analyses, and it may be divided into five groups as follows.

The first group of papers consists of nine papers that address various issues in the area of particles/nanoparticles suspensions flow that are used in different applications. Z. You et al. have studied a long-term deep bed filtration in porous media with size exclusion particle capture mechanism in the paper entitled "*Exact solution for long-term size exclusion suspension-colloidal transport in porous media*." On the other hand, E. H. Aly and A. Ebaid have introduced a direct and effective approach to obtain the exact analytical solution for the nanoparticles-water flow over an isothermal stretching sheet with the effect of the slip model in the paper entitled "*Exact analytical solution for suction and injection flow with thermal enhancement of five nanofluids over an isothermal stretching sheet with effect of the slip model: a comparative study*." In another paper entitled "*The flow and heat transfer of a nanofluid past a stretching/shrinking sheet with a convective boundary condition*," S. Mansur and A. Ishak have studied the boundary layer flow of a nanofluid past a stretching/shrinking sheet with a convective boundary condition. Moreover, H. Qing and X. Mingliang have proposed a model of fundamental aspects of the Taylor-series expansion method of moment (TEMOM) to describe the aerosol population balance equation due to Brownian coagulation in the continuum regime in the paper entitled "*The fundamental aspects of TEMOM model for particle coagulation due to Brownian motion—part ii: in the continuum regime*." R. Wang has presented numerical investigations on particle trapping techniques by using intrinsic hydrodynamic effects in an expansion-contraction microfluidic device in the paper entitled "*Hydrodynamic trapping of particles in an expansion-contraction microfluidic device*." L.-Z. Huang and D.-M. Nie in the article entitled "*Lattice Boltzmann simulation of collision between 2D circular particles suspension in Couette flow*" simulated the collision between 2D circular particles suspension in Couette flow by using multiple relaxation time-based lattice Boltzmann and direct forcing/fictitious domain method. In the paper entitled "*Modeling and numerical*