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Presenter Short CV

Mohamed H.S. Bargal received a B.Sc. degree in Mechanical Engineering from Mechanical Power and Energy Engineering Dept., Faculty of Engineering, Minia University, Egypt in 2014. He joined his department as a Teaching Assistant. He also obtained a master's degree in Power Machinery and Engineering program from the Automotive Engineering School, Wuhan University of Technology, China in 2020 (Through CSC Scholarship). Recently, **Bargal** is a PhD candidate at the Mechanical Engineering Department, King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia. His research interests include heat transfer enhancement, nanofluids, cooling of fuel cells, multiphase flow, and multiphase pumps. He has authored 20 articles in high-impact journals, for example, Process Safety and Environmental Protection, Journal of Thermal Analysis and Calorimetry, Results in Engineering, Thermal Science and Engineering Progress, International Journal of Energy Research, and Heat Transfer. He also serves as a peer reviewer for several leading titles, including Applied Thermal Engineering, International Journal of Hydrogen Energy, Thermal Science and Engineering Progress, Discover Applied Sciences, Scientific Reports, Case Studies in Thermal Engineering, and Results in Engineering.

Papers Information

ID 280 and Title: Data-Driven Thermal Performance Prediction of ZnO/Water Nanofluid Radiators for Fuel Cell cooling

ID 258 and Title: Thermohydraulic performance Investigation of GQD/water nanofluids in a Microchannel Heat Sink with Sinusoidal Cavity

ID 258- Abstract: Nanofluids are employed for the heat dissipation effectively of various electronic devices, such as microchannel heat sink (MCHS). Nonetheless, nanofluids with remarkable thermal stability and characteristics are still required. Therefore, this study presents evaluation of graphene quantum dots (GQD) nanofluids performance inside MCHS with sinusoidal cavities and rectangular ribs. Due to this nanofluid type provides a variety of superior characteristics, including low effects on rheological properties, enhanced thermal properties, and great chemical stability. The hydrothermal behavior of GQD nanofluids was done through ANSYS Fluent program, that solves the governing equations of model by the finite volume approach. The numerical modeling is based on varying GQD concentrations (0.1, 0.3, and 0.5%) and Reynolds numbers (Re) range from 100 to 500. The results demonstrated that heat transfer coefficient (h) significantly enhanced with adding the GQD nanoparticles, meanwhile the pressure drop (ΔP) grew clearly as penalty Further, increasing Re nanofluids provided more uniform temperature distribution over heated surface of bottom wall. For instance, at ϕ =0.5 and Re=500, the Θ value dropped by 13.2% compared to the water. To conclude, the highest PEC values were 1.049, 1.064, and 1.129 at Re=100 with 0.1%, 0.3, and 0.5% of GQD nanoparticles, respectively.