

Preface

Solar thermal technologies, combined with nano-enhanced phase change materials (NEPCMs), represent a transformative approach in advancing high-efficiency electric and solar mobility systems. By effectively harvesting and storing solar thermal energy, these innovations address critical challenges in thermal management and energy storage for electric vehicles (EVs) and solar-powered transportation. NEPCMs, with superior thermal conductivity and heat storage capacity, enable optimized battery performance, extended driving ranges, and enhanced sustainability. This integration not only reduces dependency on conventional fuels but also aligns with global efforts toward decarbonization and sustainable mobility. The following work explores this synergy for next-generation clean energy transportation solutions.