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The chapters in this book are based on papers covering various qualities of fuel cells. They address topics including barriers to the market introduction of alternative vehicles and ways to address these challenges, retail infrastructure cost comparison of hydrogen and electricity, a conductive carbon coating on 316L stainless steel for bipolar plates for the polymer electrolyte membrane fuel cell (PEMFC), chemical hydrides for hydrogen storage, hydrogen sensors, a simulation model for comparing on-board hydrogen storage technologies, an air supply system, a hybrid electric system for a hydrogen fuel cell vehicle and its energy management, a control system for sensing differential pressure between air andhydrogen in a polymer electrolyte fuel cell (PEFC), and optimization of a fuel cell hybrid vehicle powertrain design.