This collection comprises selected papers presented at the International Conference on Combustion Physics and Chemistry (ComPhysChem’18) held at Samara National Research University on July 24-27, 2018 (Samara, Russia). The papers cover a broad range of fundamental and applied topics in the area of combustion physics and chemistry including fundamental physical-chemical processes, quantum chemical studies of potential energy surfaces of chemical reactions in flames, kinetics and dynamics of elementary processes, mathematical modeling of processes in combustion, laser and optical diagnostics, chemical, plasma, and laser initiation of combustion, flame structure, formation and destruction of polycyclic aromatic hydrocarbons (PAH), soot, graphene, and carbonaceous nanoparticles, chromatography and measurement methods, and ecological issues related to combustion.

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