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Sommario/riassunto	In recent years, improving the sustainability of the steel industry and reducing its CO2 emissions has become a global focus. To achieve this goal, further process optimization in terms of energy and resource efficiency and the development of new processes and process routes are necessary. Modeling and simulation have established themselves as invaluable sources of information for otherwise unknown process parameters and as an alternative to plant trials that involves lower costs, risks, and time. Models also open up new possibilities for model-based control of metallurgical processes. This Special Issue focuses on recent advances in the modeling and simulation of unit processes in iron and steelmaking. It includes reviews on the fundamentals of modeling and simulation of metallurgical processes, as well as contributions from the areas of iron reduction/ironmaking, steelmaking via the primary and secondary route, and continuous casting.