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Sommario/riassunto	In the last decade, design and material innovations for manufacturing composites have reached new heights. Thermoplastic polymers and their composites have become the most in-demand materials in recent times as they provide numerous advantages over thermoset composites. Thermoplastic polymers have a high damage tolerance, high impact resistance, recyclability, formability, weldability, repairability, and cost-effectiveness compared with thermoset composites. Thermoplastic polymers and composites are widely used in automotive, aerospace, electrical and electronics, industrial, and medical applications. Thermoplastic composites are estimated to grow from USD 28.0 billion in 2019 to USD 36.0 billion by 2024. High-performance thermoplastic materials are used in conjunction with a multitude of manufacturing processes like injection moulding, thermoforming, prepreg, liquid injection processes, automated tape placement, filament winding, pultrusion, additive manufacturing, and other processes. The material limits, design, and assembly requirements, as well as the processing constraints, are significantly important for the realisation of novel product development using a manufacturing process by simultaneously optimising reliability, safety, and other performance-related issues. The current thermoplastic material systems and manufacturing techniques still have plenty of

room for optimisation and advancement. This reprint presents the latest scientific and technical advances in thermoplastic materials and their composites, processing, characterisation, product development, and manufacturing process parameter optimisations.