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Innovations in Metallurgy

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Editorial

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INTRODUCTION

Metallurgy underpins the development of alloys and metallic systems with high performance and durability. With advances in computational techniques and additive manufacturing, metallurgical sciences are evolving rapidly. This article reviews five key domains: advanced high-strength steels, lightweight alloys, superalloys, metallic glasses, and additive manufacturing of metals.

Key Research Areas in Metallurgy

Advanced High-Strength Steels: Widely used in automotive industries for safety and lightweight design [1].

Lightweight Alloys: Aluminum, magnesium, and titanium alloys enhance aerospace and transportation efficiency [2].

Superalloys: Nickel-based superalloys maintain strength at extreme temperatures, essential for turbines [3].

Metallic Glasses: Amorphous metals offer superior strength and corrosion resistance [4].

Additive Manufacturing of Metals: 3D printing allows for the creation of complex metallic components with minimal waste [5].

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