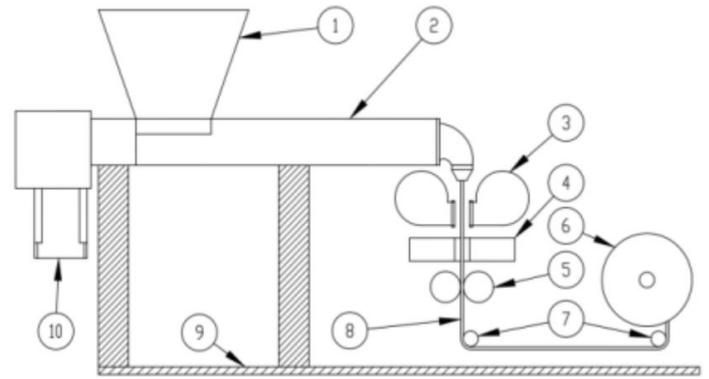


GRANTED

(IN541104)

A biomimetic composite for orthopedic and dental implants and method of fabricating the same



NEED

The need for stronger, biocompatible materials in orthopaedic and dental implants is critical. Current materials fail to combine durability with compatibility, leading to implant failure, inflammation, and high revision rates in surgeries.

TECHNOLOGY OVERVIEW

This biocomposite material, composed of PEEK, BNNT, and optionally HA, offers enhanced mechanical strength and biocompatibility. It is optimized for use in 3D printed orthopaedic and dental implants, addressing failure rates in traditional implants.

TECHNOLOGY KEY FEATURES

Polyether ether ketone (PEEK) matrix, boron nitride nanotubes (BNNT), hydroxyapatite (HA) reinforcement, 3D printing, high biocompatibility, enhanced mechanical properties.

[Read more here](#)

Technology is available for licensing/ co-development.

Reach out to Prof. Deepak Chitkara, Coordinator, BITS Technology Enabling Centre,
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MARKET ANALYSIS

The global market for orthopaedic biomaterials is projected to grow at a CAGR of 7.5% from 2023 to 2033. Increasing demand for personalized implants, 3D printing, and improved biocompatible materials are key growth drivers.

Target Industries

Target industries include medical device manufacturers (orthopaedic and dental implants), 3D printing companies specializing in healthcare applications, and research labs working on advanced biomaterials. Opportunities exist in implant customizations, bio-reinforced materials, and additive manufacturing.

AT A GLANCE

- SDG 3 (Good Health and Well-being), SDG 9 (Industry, Innovation & Infrastructure)