PROCESS FOR PRODUCING CERAMIC PORCELAIN SLURRY FOR 3D PRINTING APPLICATIONS

ABSTRACT OF THE DISCLOSURE

The present utility model relates to a process for producing a ceramic slurry composition for additive manufacturing, particularly stereolithography (SLA) 3D printing of dental prosthetics. The process includes preparing porcelain by milling feldspar, silica, clay, and alumina with water, followed by drying. The porcelain is then modified with polymeric additives such as polyethylene glycol, oleic acid, or stearic acid using a ball mill with methanol or isopropyl alcohol, and dried to obtain a modified porcelain powder. The modified porcelain powder is combined with a liquid photocurable resin, such as polylactic acid, polymethyl methacrylate, or an acrylate-based resin, at a weight ratio of 1:2 to 2:1, to form a slurry. The slurry is further aged for 5 to 8 hours to remove trapped air. Compared to traditional subtractive methods of porcelain prosthetic fabrication, the resulting slurry composition provides improved material efficiency, reduced waste, and time-effective processing, thereby supporting the advancement of additive manufacturing in dental applications.