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Joining SrTiO3 ceramics by using SnO-ZnO-P2O5-SiO2 phosphate glass filler

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In this paper, 49SnO-19ZnO-32P2O5-3SiO2 phosphate glass filler metal was used to connect SrTiO3 ceramics.The microstructure and mechanical properties of brazed joint at different holding time were studied. The thermal properties of glass were measured experimentally. The wettability of glass filler metal on strontium titanate ceramics was studied. When the holding time is more than 5 minutes, the Ti6Sn5 phase is formed by the reaction of the strontium titanate ceramic matrix with the glass, and the Ti6Sn5 phase is evenly distributed on the needle phase (ZnO2). With the increase of the holding time, the decomposition of the matrix is accelerated, and the synergistic growth of the two phases is promoted. Finally, the joint reaction mechanism is thoroughly studied.