

**Developing Low-Loss and Temperature-Stable  $\text{Ba}_n(\text{Zr,Nb})_{n-1}\text{O}_{3n}$  ( $n=7$ ,  
8) Microwave Dielectric Ceramics by Investigating Relationship  
between Structure and Properties**

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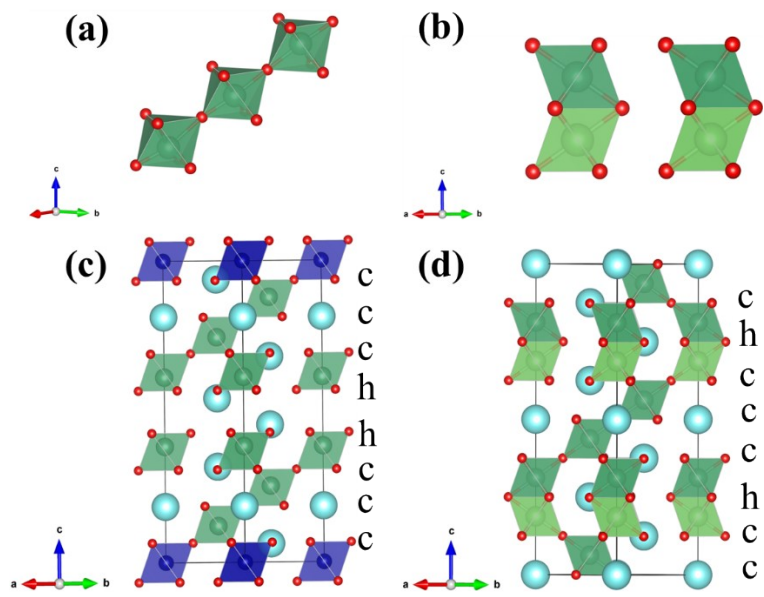


Fig.S1 (a) Corner sharing connection;(b) Face-sharing connection; Shifted (c) and twinned (d) hexagonal perovskite structures.

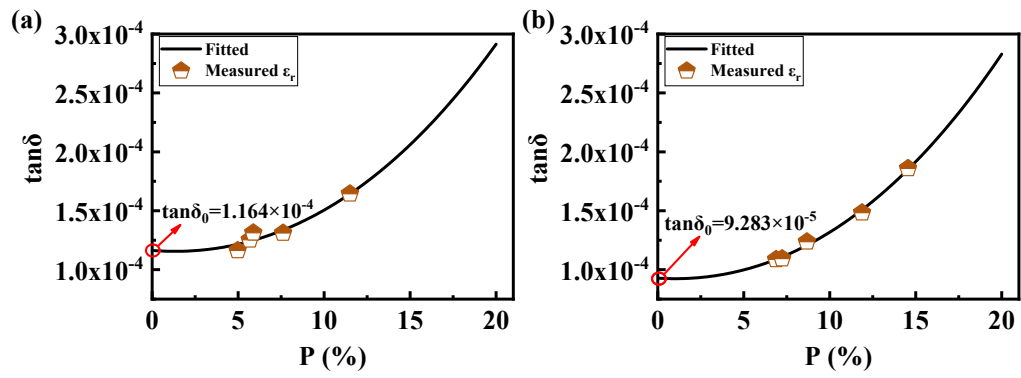


Fig.S2 The effect of porosity on  $\tan\delta$  of  $\text{Ba}_7\text{Zr}_2\text{Nb}_4\text{O}_{21}$  (a) and  $\text{Ba}_8\text{Zr}_3\text{Nb}_4\text{O}_{24}$  (b).

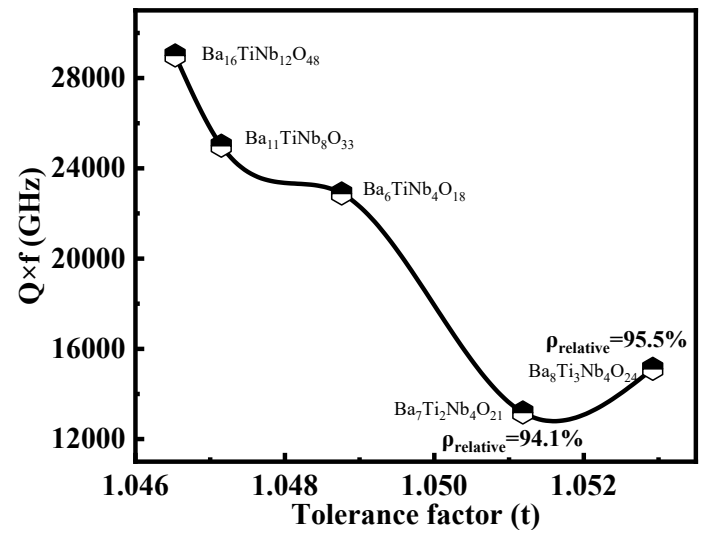


Fig.S3 The  $Q \times f$  as a function of tolerance factor in BaO-TiO<sub>2</sub>-Nb<sub>2</sub>O<sub>5</sub> systems.