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In order to identify the peak that appeared at 0.78 keV, powder samples of BZY20 (without NiO additive), BaCO$_3$, ZrO$_2$, Y$_2$O$_3$ and NiO were subjected to SEM-EDS analysis with Genesis-XM2 (EDAX, Mahwah, NJ) attached to a scanning electron microscope (SEM, VE-7800, Keyence Co., Osaka, Japan). The spectra are shown in Fig. S1(a). For close examination the area between 0.4 and 1.1 keV is magnified in Fig. S1(b) for BZY20, BaCO$_3$ and NiO. It is clear that the spectrum of BaCO$_3$ also has a peak around 0.78 keV in agreement with that of BZY20. Thus the peak at 0.78 keV can be attributed to barium, and not other elements including nickel.

Fig. S1  (a) SEM-EDS spectra of powder samples of BZY20 (without NiO additive) and the raw materials of BaCO$_3$, ZrO$_2$, Y$_2$O$_3$ and NiO; (b) enlarged spectra of BZY20, BaCO$_3$ and NiO in the energy range between 0.4 and 1.1 keV.