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Photochemical Reactivity of Ba_{1-x}Sr_xTiO₃ Solid Solutions ANDREW GAMALSKI, Arizona State University, NINA V. BURBURE, GREGORY S. ROHRER, Carnegie Mellon University — The photochemical reactivities of Sr_xBa_{1-x}TiO₃ solids solutions were investigated as a function of composition. Samples with $x = 0$ to 1 were used to reduce Ag⁺ in aqueous solution to Ag⁰ on the sample surface and the relative heights and densities of the silver deposits, as measured by atomic force microscopy, were used to quantify the relative reactivities. A local maximum in the reactivity is observed at $x = 0.26$, which is near the cubic-tetragonal phase boundary. Based on these observations, it is concluded that the increase in the dielectric constant at this composition increases the width of the depletion layer and this promotes electron transfer to the surface and increases the reactivity.

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