We propose a sparse signal representation based method for imaging solid materials in the presence of mode conversion phenomenon using an array of ultrasonic transducers. Traditional imaging techniques, such as MUSIC, Capon, and delay-and-sum (DAS) beamformer, do not take into account mode conversion. Recently, the well-known Capon and MUSIC techniques have been modified such that they can be used in multimodal propagation environments. Referred to as MC-Capon and MC-MUSIC techniques, these methods yield a higher resolution and lower sidelobe levels, as compared to the DAS beamformer. Moreover, unlike the DAS beamformer, they do not suffer from Rayleigh resolution limit, which is independent of the SNR. The MC-MUSIC and MC-Capon methods are capable of taking into account the effect of all different propagation modes, and therefore, find the locations of the reflectors with high precision. These two techniques, however, suffer from all the shortcomings that the MUSIC technique and the Capon method have. To overcome these issues, we propose a sparse signal representation based technique that not only is able to take into account the effect of all modes but also does not suffer from the aforementioned shortcomings. Our method can be implemented using only one snapshot from the array and does not require several snapshots. Its sensitivity to SNR is much less than that of the MC-MUSIC and MC-Capon approaches. Furthermore, unlike the MC-MUSIC method, there is no need to know the number of reflectors in advance. We show, through numerical and experimental examples, that compared to the aforementioned algorithms, our approach offers higher resolution and has lower sidelobe levels.