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Defect identification in FeTiO₃ using positron annihilation technique

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Abstract content
   (Max 300 words)

Positron lifetime measurements are conducted in ilmenite material with hexagonal structure, in the temperature range from 30 K to 500 K. The analysis of the positron lifetime spectra is best fitted to two lifetime components. The positron lifetime in the bulk ranges from 177 ps to 186 ps in the temperature range for defect-free region. The second lifetime components of localized positrons range from 350 ps to 462 ps in the temperature range. The second lifetime components are attributed to the positron trapping at structural vacancies. A close analysis of second lifetime components and the fact that the annihilation ratios are greater than 1.4 suggest a formation of vacancy clusters in the temperature range from 250 K to 500 K.

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