

Abstract Submitted
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The effect of time on the dehydration of CsH_2PO_4 at 260 C using XRD¹ ANDREA MONTGOMERY, ISRAEL MARTINEZ, JUAN LEAL, ALAN GOOS, ALEX PRICE, HEBER MARTINEZ, CRISTIAN BOTEZ, University of Texas at El Paso — Solid Acids such as Cesium Dihydrogen Phosphate, CsH_2PO_4 (CDP), are excellent electrolytic material for the construction of intermediate temperature range hydrogen fuel cells. CDP exhibits a high protonic conductivity at temperatures ca. 235 C. Associated with the increase in conductivity, there is a polymorphic transformation from a monoclinic crystalline structure to a cubic structure. However, at the temperature that high conductivity is achieved there is a competing chemical dehydration process, which causes a phase transition from the cubic phase (CDP) to a pyrophosphate monoclinic phase. This appears to be the onset of the decline in conductivity of the material. Chemical decomposition (dehydration) of the material has been reported to be delayed heavily with the introduction of water vapor. In order to prevent the decomposition, it is imperative that data is gathered about the dehydration process.

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