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CsH_2PO_4 superprotonic phase stabilization attempts[1] HEBER MARTINEZ, JUAN LEAL, ALAN GOOS, ISRAEL MARTINEZ, ALEX PRICE, CRISTIAN BOTEZ, The University of Texas at El Paso — CsH_2PO_4 (CDP) is one of the most promising electrolytes for proton exchange membrane fuel cells in the intermediate temperature range (200 - 400 °C). One of the biggest challenges is the stabilization of the "superprotonic" phase present in CDP when it is heated above 231°C. We performed XRD and Impedance Spectroscopy (IS) on pure CDP and composites under ambient and humidified atmospheres. XRD confirmed the presence of the cubic phase of CDP with space group Pm-3m during a short interval of temperature and time. Although previously reported in the literature to appear only in the presence of a humidified atmosphere, IS showed the presence of the highly conductive phase also during a short time interval. Silica additive and a humidified atmosphere increase the stability of the superprotonic phase.

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