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HIGHLIGHTS AND BREAKTHROUGHS

$(FeH)_{1-x}Ti_xO_2$: A new water carrier to the mantle transition zone

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Abstract: It is now widely accepted that Earth's transition zone, located at depth between 410 and 670 km, is most likely hydrated. However, a definite conclusion has yet to be reached regarding the nature of the hydrous phase or phases that have the capacity to efficiently transport water down to such depths. In the April issue of *American Mineralogist*, Nishihara and Matsukage (2016) show that $(FeH)_{1-x}Ti_xO_2$ can be stable in wet basalts and sediments at high pressures and temperatures. These phases allow subducting lithosphere to transport far more water to the mantle transition zone than previously thought possible. **Keywords:** Nominally anhydrous mineral, hydrous mineral, subduction zone, H_2O, wadsleyite, ringwoodite, water recycling