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**Watching the dehydrogenation of alane (AlH3) in a TEM** SHANE BEATTIE, TERRY HUMPHRIES, LOUISE WEAVER, SEAN MCGRADY, University of New Brunswick — Alane (AlH3) is a promising candidate for on-board hydrogen storage applications. Its theoretical gravimetric capacity is 10.1 percent and decomposition is achieved with modest heating (60-200 deg C). We studied the dehydrogenation of alane, insitu, in a TEM. Alane powder was loaded into the TEM and heated at 80 deg C. We were able to 'watch' the dehydrogenation of the alane to aluminum. Electron diffraction and dark fiend images are used to show how and where the aluminum crystallites grow. Although crystalline aluminum phases were successfully identified, some of the sample remained amorphous. We will discuss the nature of the amorphous material and present images clearly identifying the nature of the aluminum crystallites.

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