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Stainless Steel to Titanium Bimetallic Transitions

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In order to use stainless steel piping in an LCLS-II cryomodule, stainless steel to titanium bimetallic transitions are needed to connect the stainless steel piping to the titanium cavity helium vessel. Explosion bonded stainless steel to titanium transition pieces and bimetallic transition material samples have been tested. A sample transition tube was subjected to tests and x-ray examinations between tests. Samples of the bonded joint material were impact and tensile tested at room temperature as well as liquid helium temperature. The joint has been used successfully in horizontal tests of LCLS-II cavity helium vessels and is planned to be used in LCLS-II cryomodules. Results of material sample and transition tube tests will be presented.

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