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The Melting Line of Molecular Hydrogen at High Pressure SHANTI DEEMYAD, ISAAC SILVERA, Lyman Laboratory of Physics, Harvard University — We have measured the melting line of molecular hydrogen to pressure P=82 GPa in a diamond anvil cell (DAC) using pulsed laser heating and found a peak at P=64.5±4 GPa and T=1055±20 K. Previous attempts to measure the melting temperature of hydrogen in a DAC by CW ohmic heating methods were limited by the diffusion of hydrogen at elevated temperatures. We have developed a technique of temperature determination in a pulsed laser heated DAC and succeeded to achieve much higher pressures and temperatures. In the pulsed laser method hydrogen diffusion is suppressed allowing access to high temperatures at elevated pressures.

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