Table 1. Apparatus and materials used in experimental setup

Apparatus	Quantity	Uncertainty	Employment
Glass syringe	1	$\pm$0.5 ml	Used to collect hydrogen
Electronic balance	1	$\pm$0.01 g	Used to measure equal weight of Mg (0.15 g)
Timer	1	$\pm$0.1 s	Used to measure the time period taken to collect H_2 in syringe
Glass thermometer	3	$\pm$0.5 K	Used to measure and monitor the temperature of the water bath, acetic solution and temperature of room
Volumetric pipette 5 ml	1	$\pm$0.01 ml	Used to create solutions of different concentration
Holder	3	-	Used to hold test tube (and thermometer), syringe and video camera
Rubber tube	1	-	Used connect syringe with test tube and transfer H_2
Test tube	1	-	Used to immerse in water bath, where the reaction took place
Cork(cup)	1	-	Used to close the test tube
Beaker 50 ml	2	Not important for the experiment	The flask where acetic-acid(from canister) and water were placed before creating solution
Magnetic stirrer	1	-	Used to stir water in the water bath for creation equal temperature through all of the volume
Graduated cylinder ml	1	$\pm$0.5 ml	The cylinder where acetic acid and water were placed using pipette
Water Bath (1dm^3)	1	Not important for the experiment	A thermostatically controlled water bath was used to both manipulate the desired temperature of the reactants when independent variable was temperature, and maintain the reactants at 25℃ when independent variable was concentration, in which the test tube containing the reactants will be immersed.
Heating plate	1	-	Used to heat water bath for a constant temperature
Ice cubes	15	-	Were placed instead of water bath to cool the solution until 7℃ .
Video camera	1	$\pm$1 s	Used to monitor piston displacement in the syringe.
Magnesium	Magnesium Ribbon $25g(Mg)$ – Roll Coil		
Acetic acid	*Grape Vinegar PLATANIS white* 4*L*, Acidity: 4.5% which is equivalent to 0.732 mol dm^{-3}		