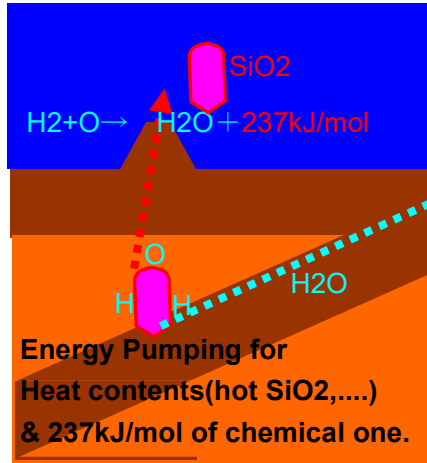


Explosion or Eruption ;;Energy Hierarchy of Volcanism.

A volcanism is H2 gas explosion, yes, or no ?!! Note in general, an explosion can be triggered by **small shaking**, while the after become big destructive energy of irreversible process,



Author could not understand "Eruption" something pushing out, but "Explosion" something rapid exponential increasing of irreversible process. This is not case of "Hot Spot", but sea ridge.

Geologists do not concern on following basic reactions, both in magma initializing and the far after volcano explosion

$H_2O + SiO_2 + Q(60kJ/mol?) \rightarrow H_2SiO_3$magma initializing

$H_2SiO_3 \rightarrow SiO_2 + H_2O + Q(237kJ/mol)$. H₂ explosion

[1]: From Magma starting to end of Volcano Explosion.

.....citation missing-unkown???

A volcano's explosiveness depends on the composition of the magma (molten rock) and how readily gas can escape from it. As magma rises and pressure is released, gas bubbles (mainly of water vapor and carbon dioxide) form and expand rapidly, causing explosions.

How is magma formed? ``3 methods" to turn rocks that don't dissolve easily into mush

<https://gendai.media/articles/-/129398?page=5>

① Hydration = how to make molten rock !

H_2SiO_3 : metasilicic acid (SiO₂) hydrated magma = molten rock!

$H_2O + SiO_2 + Q(>0) \rightarrow H_2SiO_3$... Hydration Reaction in forming magma in deep hot mantle.

$H_2SiO_3 \rightarrow SiO_2 + H_2O + q(>0)$... Dehydration reaction in volcano eruption

*TNT: [-3434.00; -3388.60] kJ/mol ↑ this is not so much explosive.

Metasilicic Acid $\rightarrow q(>0) = -55$ to -65 kJ/mol,citation missing-unkown???

https://en.wikipedia.org/wiki/Metasilicic_acid

Hydration energy of SiO and SiO₂ with 1-4 water ...

Calculated H₂O adsorption energies are in the range -55 to -65 kJ/mol, consistent with experimental data. The lowest and the highest O-H stretching vibrational ...

② Dehydration = how to make H₂ gas and the Explosion.

$H_2SiO_3 \rightarrow SiO_2 + H_2O$ ← this can be explosive.

$\rightarrow SiO_2 + H_2O + Q(237kJ/mol)$... Dehydration reaction in volcano eruption

[2] : **Tonga Eruption Blasted Unprecedented Amount of Water Into Stratosphere**

<https://www.jpl.nasa.gov/news/tonga-eruption-blasted-unprecedented-amount-of-water-into-stratosphere/>

H₂O=18g/mol.....27%

SiO₂=48g/mol

H₂SiO₃=66g/mol

(1)M(water)=146 teragrams=146x10¹²g=146x10⁹Kg.....**blasted H₂O**

(2)H₂O+237kJ/mol → H₂+(1/2)O₂.....H₂ fuel energy.

(3)**blasted volcano total energy:**

M8.4= 61 Mt of TNT=(1Mt= 4.184x10¹⁵J)x61Mt=**2.6x10¹⁷J.**

(4)**H₂ gas Explosion Energy the estimated.**

(a)10km³xρ_m =10km³x2,400kg/m³=2.4x10¹³kg.....blasted mass

(b)(146x10⁹Kg/12g)x237kJ/mol=**3x10¹⁵J.** H₂ gas energy in vaporized water

+Most of water were absorbed in ocean ?.

(c){0.27x2.4x10¹³kg/12g}x237kJ/mol= **1.3x10¹⁷J ?** ..H₂ gas energy

estimated

(d)chemical energy =**1.3x10¹⁷J**,heat kinetic one=**1.3x10¹⁷J**,the law of equipartition??

APPENDIX1:A Small Shaking can Trigger toward Explosion.

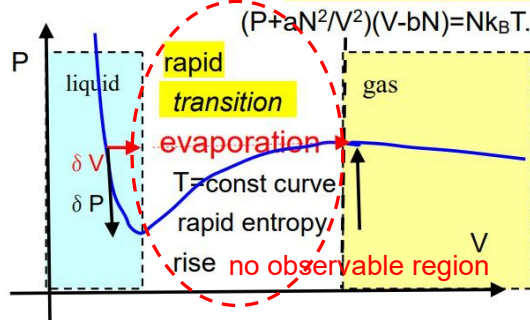
Once triggering δV exceeds **the small threshold**, liquid→gas phase transition never return backward due to singular yellow rapid transition region in Van der Waals Equation.

The **irreversibility** is also due to so called **vertical transition** in chemical reaction.

A preceding electron cloud for coming realized molecular had been formed before coming nuclei at their position. This is important in considering volcano-volcano interlocking.

(1)Liquid Gas Phase Transition of MAGMA by Hitting a Seismic Force.

Van Der Waals State Equation tells small volume change= δV causes large pressure one= δP toward the **sudden evaporation as irreversible process !**



It's that thing when you open the lid of a carbon drink and the volume increases slightly, causing bubbles to gush out all at once.

*H₂O+CO₂⇌H₂CO₃..... carbonated drink
 *H₂O+SiO₂⇌H₂SiO₃..... siliconated **MAGMA**

(2) δV is caused by external force of such low frequency Seismic force.

<http://www.777true.net/Undersea-Explosion-The-SATAN-Prophesied.pdf>