1













Lecture 17 CH131 Fall 2020 Copyright © 2020 Dan Dill dan@bu.edu What is the standard state at 25°C? In tables of enthalpies of formation, such as http://goo.gl/aljmi, ... Gas N205 11.3 Oxygen -24 0 Gas 249 Gas 02 Gas 03 143 Phosphorus White phosphorus Solid P4 the starr 130(9 ere $= \Delta H_{1}(0_{2}, q] = +143$ 30 DHay = DHelo3, 97-32 12



13

11/17/2020 10:06 AM







Let us 17 CH131 Fall 2020 Copyright & 2020 Dan Dill danggbu.edu $Using \Delta H^{o}_{f} to compute \Delta H^{o}_{rxn}$ $4 \operatorname{NH}_{3}(g) + 5 \operatorname{O}_{2}(g) \rightarrow 4 \operatorname{NO}(g) + 6 \operatorname{H}_{2}\operatorname{O}(g)$























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 The essence of spontaneous changes
 "things happen simply because they can happen and because they are statistically most likely to happen."

 Michael Munowitz, "Principles of Chemistry," W. W. Norton, 2000
 All spontaneous change results in the possible arrangements (W) of particles that is as large as it can be:

 W_i → W_f = W_{max}
 €66











