

Creative data destruction

Chemical and molten metal extravaganza
extraordinaire, with some accidental lessons in
chemistry and metallurgy executed at the hot and
fun haxogreen 2018 by a merry band of hackers

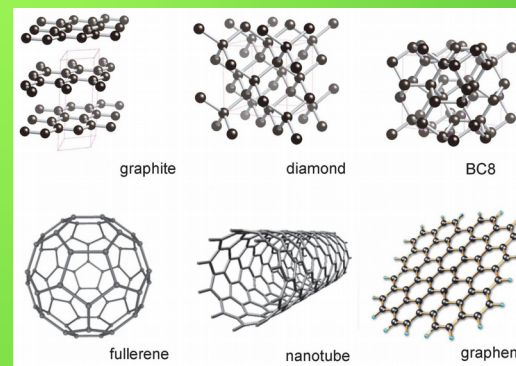
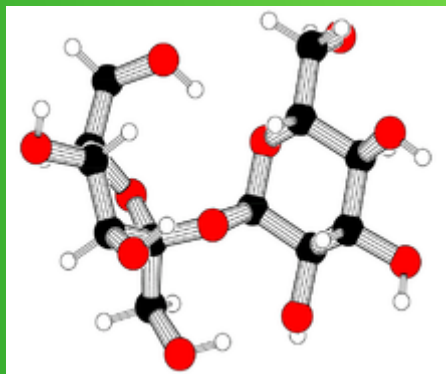
Programme

- Sweet and Sour dreams
 - By Anus
- Harddisk goes Fight Club
 - By Ranzbak
- Impractical but awesome damascus
 - By Niko, Ranzbak and gori
- OMG SPARKS !!!!11one
 - By gori
- Whoosh, there goes my data...
 - By Ranzbak, Anus, Gori
- Nerd rage medieval style afterparty

This all supported by analog synth-noise and real-time visuals by Benadski, Timo and Melissa

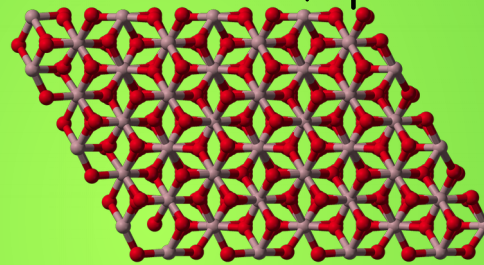
Sweet and Sour dreams

- Sugar + Sulfuric acid → Carbon and Water
 - Dehydration reaction
 - Exothermic (our favourite word)



Harddisk goes Fight Club

- Aluminium (Al) likes to act all tough
 - But in fact it is weak sauce, protected by its rusty skin Al_2O_3



- Al_2O_3 is Amphoteric
 - kind of bi, likes both acids and alkali
- $\text{Al}_2\text{O}_3 + 2 \text{NaOH} + 3 \text{H}_2\text{O} \rightarrow 2 \text{NaAl}(\text{OH})_4$
 - Highly exothermic !

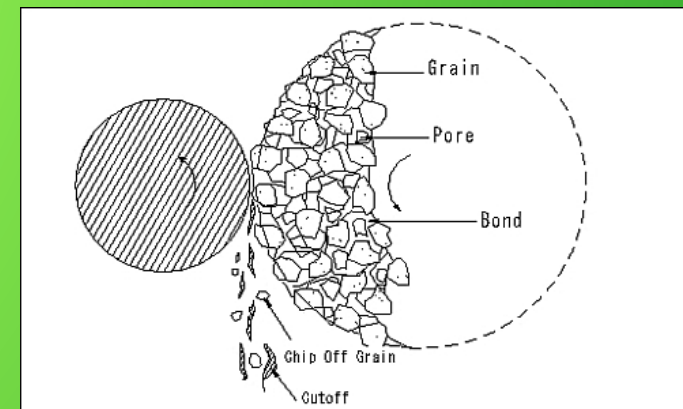
Impractical but awesome damascus

- Damascus or “pattern-welded steel”
 - Layers of different kinds of steel fire-welded together, hard work, not fun
- But wait, chemistry !
- Thermite reaction
- $\text{Fe}_2\text{O}_3 + 2 \text{Al} \rightarrow 2 \text{Fe} + \text{Al}_2\text{O}_3$
 - Very highly exothermic, > 2500 C
 - Has own oxigen,
 - Try to put it out with water \rightarrow more O_2 and $\text{H}_2 \rightarrow$ heat !



OMG SPARKS !!!!111one

- The warmer iron is, the more readily does it oxidize (burn)
- Grinding wheel turns at 11K RPM / 80 m/s
 - Al_2O_3 or SiC abrasive particles
- Friction chips and melts steel
- Air does the rest



Whoosh, there goes my data...

- ISO 27001 requires HDD to be shredded to max 3 mm
- But what if it is molten??
- Again thermite
- This time not slowed down with Borax
- Much more mixture
- Spacers between, to prevent welding of HDDs

Afterparty !

- Unleash your Nerd Rage on the remaining disks
- Bring your own gear!
- Use tongs / eye protection !
- Listen to BugBlue !