

Chemical Engineering 522

Combustion Processes

Introduction



Family



Family

Isaac++



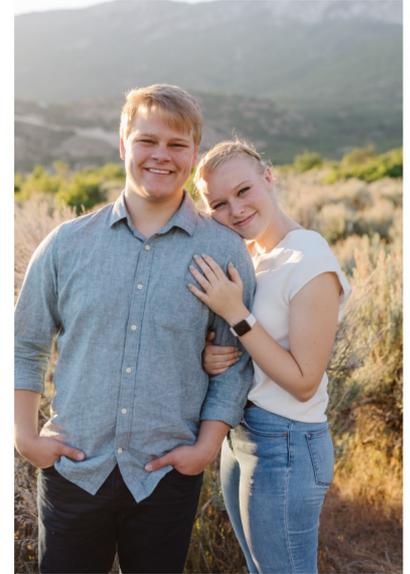
Luke



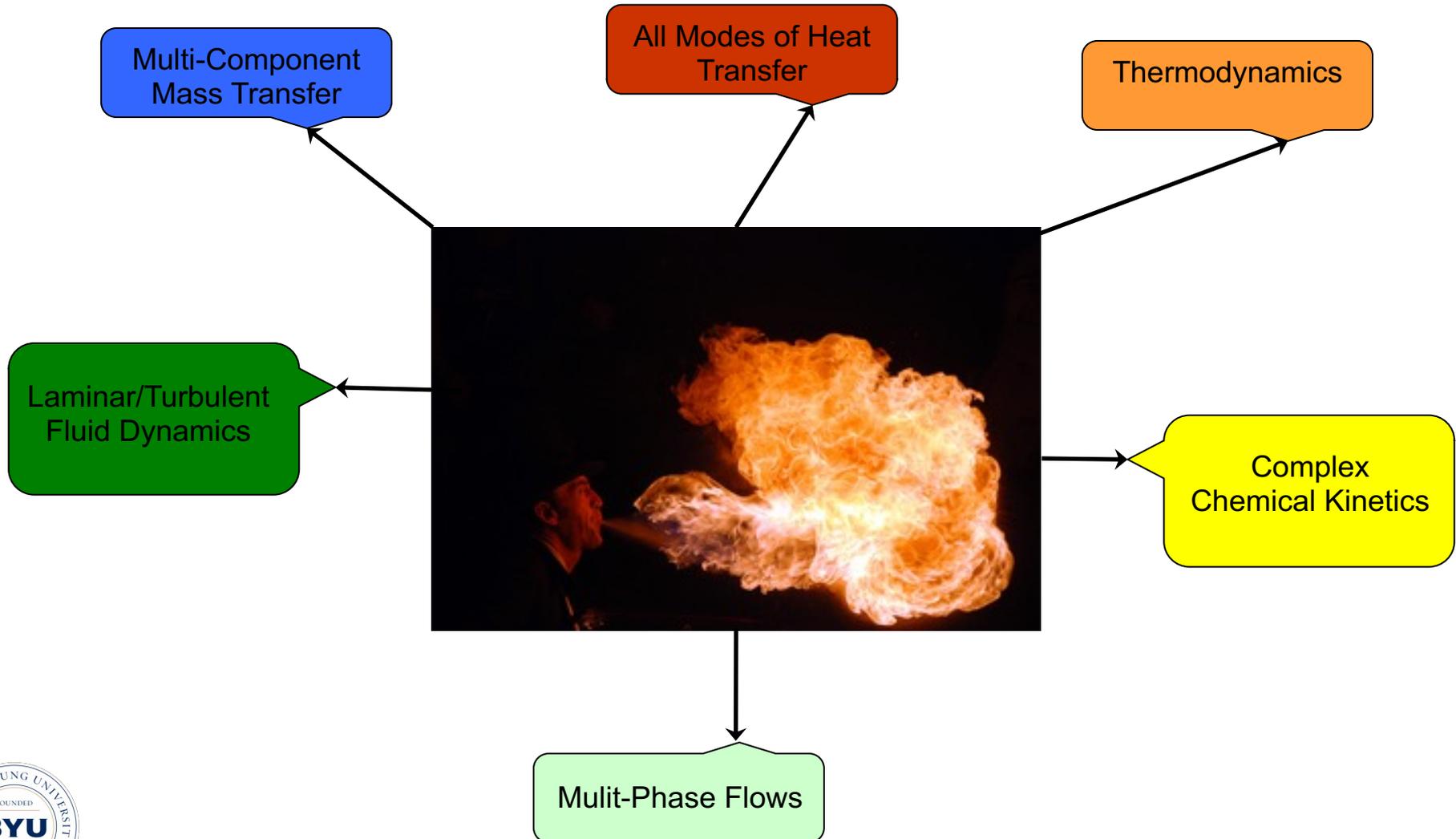
Aleah



Andrew+



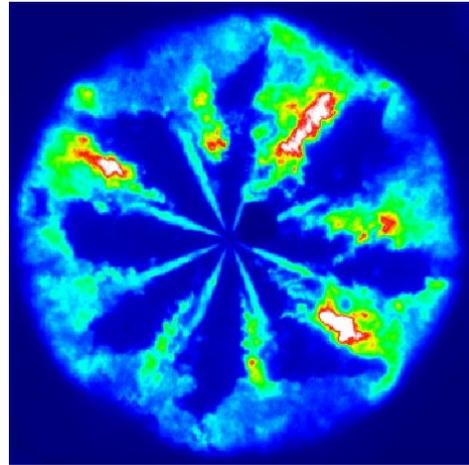
Combustion Physics



Fuels

Mostly Hydrocarbons, all three Phases

- Gas (natural gas, light hydrocarbons)
- Liquid (diesel, gasoline)
- Solid (Coal, Biomass)



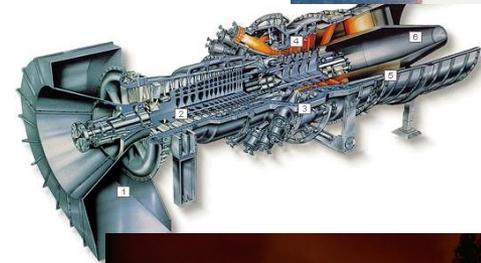
Pollutants

- NO_x
- SO_x
- P.M.
 - Soot
 - Ash
- Metals
- Unburnt HC's



Applications

- Heating
 - Furnaces
 - Boilers
 - Stoves
 - Process Heat
- Power/Electric
 - Coal PP
 - Gas Turbines
- Military/Space
 - Rockets, Missiles
- Hazards
 - Fires
 - Explosions
 - Detonations
- Transportation
 - Turbines
 - Engines
- Other
 - Catalytic combustion
 - Metal combustion, particle synthesis



Study techniques...

Learning is deeper and more durable when it is effortful. Learning that's easy is like writing in the sand, here today and gone tomorrow.

Rereading text and massed practice of a skill or new knowledge are by far the preferred study strategies of learners of all stripes, but they're also among the least productive.

Retrieval practice—recalling facts or concepts or events from memory—is a more effective learning strategy than review by rereading.

Elaboration is the process of giving new material meaning by expressing it in your own words and connecting it with what you already know.

Students who don't quiz themselves (and most do not) tend to overestimate how well they have mastered class material).

One of the best habits a learner can instill in herself is regular self-quizzing to recalibrate her understanding of what she does and does not know.

From “Make it Stick, The Science of Successful Learning” by Brown, Roediger, and McDaniel

