The nature of volcanism

You have all the tools you should need to evaluate the following properties/characteristics of volcanic eruptions and lavas. Should you need anything else, let me know and I will do my best to track things down quickly.

The viscosity of magmas have been carefully determined with experimental apparatuses for analogies in the food world (see Baker et al., Journal of Geoscience Education, 2004). Kraft smooth peanut butter at 25°C is closest in viscosity to a rhyolite magma at 800°C. Basalt (at 1200°C) is closest to Heinz Ketchup at 25°C. So in class, we have peanut butter and ketchup for means of these demonstrations.

After being assigned a question below, you are to do short experiments in class and at the end we will report back to the rest of the class in the last 15 minutes or so.

1. Which eruptions are more explosive, those involving felsic lavas or mafic? Demonstrate this.
2. Which lavas are more likely to have crystal settling to occur and why? Demonstrate this.
3. Which lava will form a strato volcano and which will more likely form a shield volcano? Why? Please provide a demonstration of this.
4. Which magma may be more likely to have less dense minerals float and accumulate at the top of a magma chamber? Why? Please try and demonstrate this.
5. Which type of magma will erupt quicker and flow quicker? Again, please demonstrate.

Entire class thought questions

Which of the following processes do not depend upon melt viscosity:

- Lava flow rate
- Cooling rate
- Crystal growth rate
- Magma ascent rate

Equipment available to use:

lots of ketchup and peanut butter
"heavy crystals" are the bolts
"light crystals" are the foam
Watch glasses and beakers
Squeezie bottels filled with either ketchup or peanut butter
2 gravy separators
plastic wrap