

Particulates



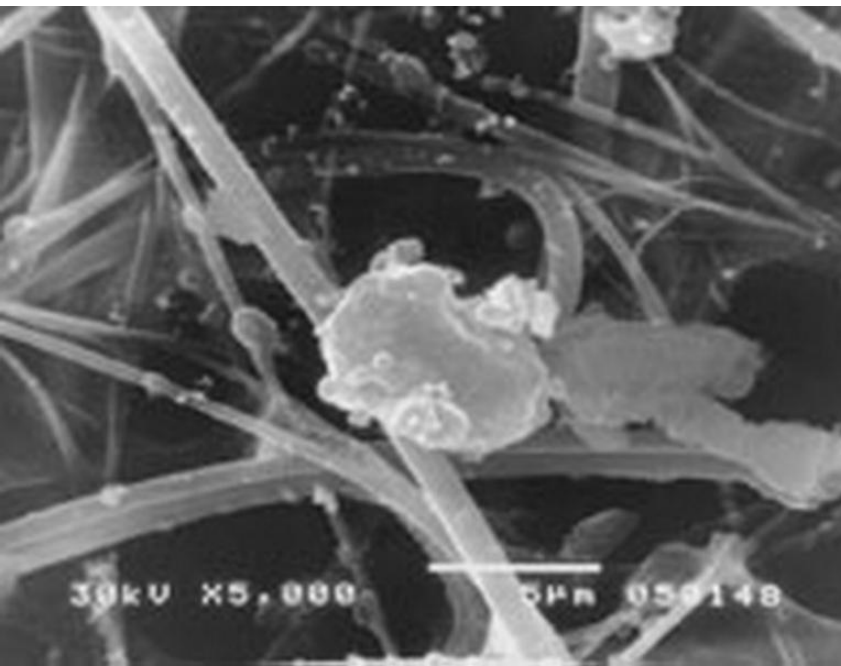
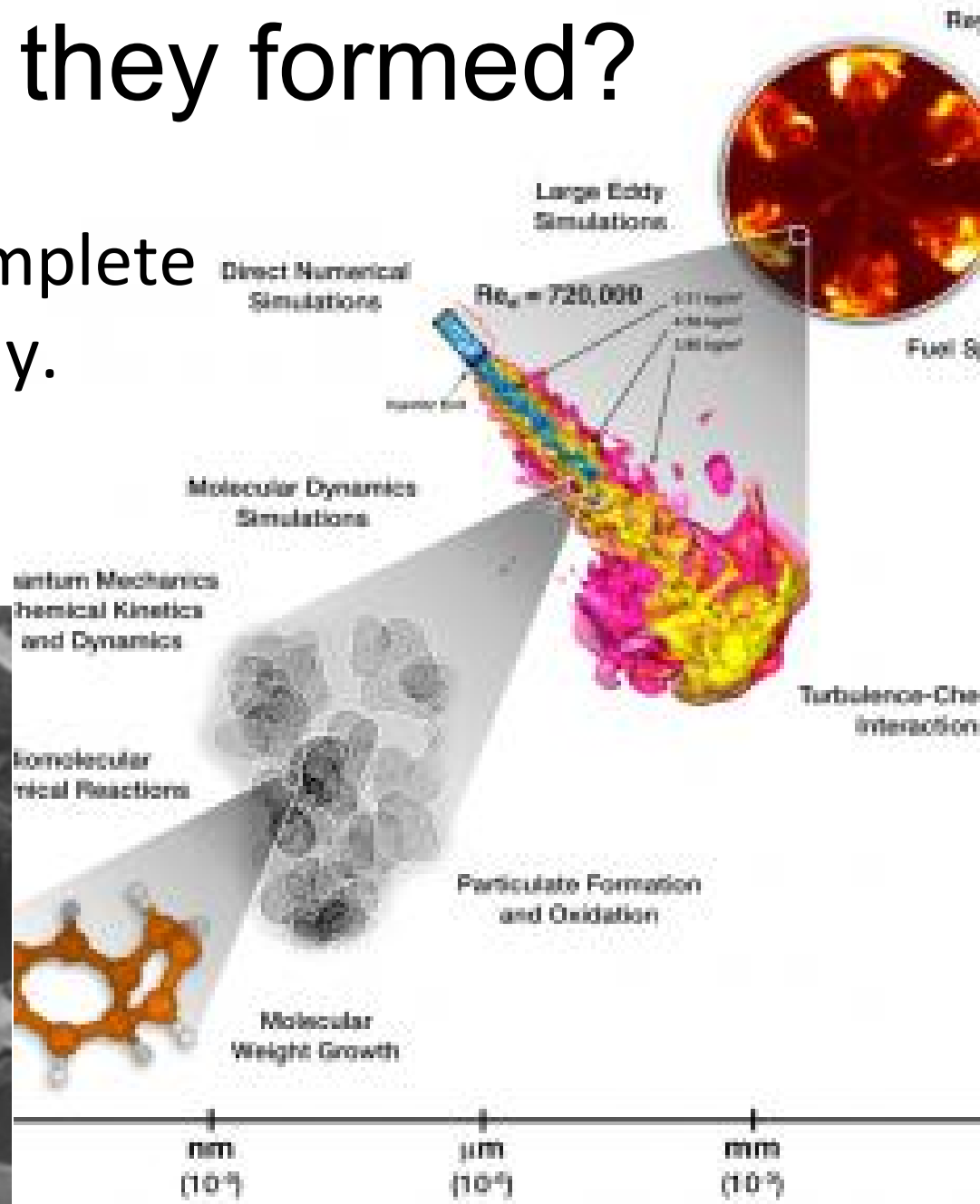
What are Particulates?

- Tiny particles or liquid droplets suspended in the air that can contain a variety of chemical components.



How are they formed?

- Formed from incomplete combustion of C_xH_y .



Diamond formed from candle



Reducing particulate production

- **Higher Combustion Temperatures and Increased Pressure Conditions**



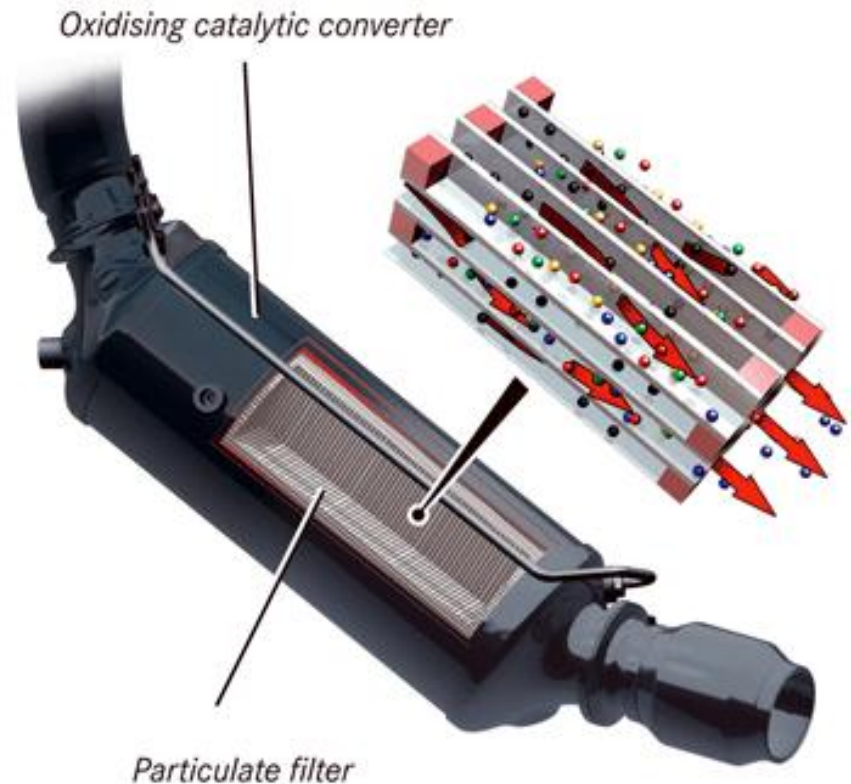
Environmental effects

- **Visibility**
- Particles in the atmosphere can affect visibility as they absorb and/or scatter light.
- **Soiling**
- Soiling by particulates is most commonly observed on cars, washing, paintwork on houses and internal windowsills.
- **Nuisance**
- Dust can cause nuisance problems, particularly near quarries, construction sites and cement works.

Particulate Filter

- An anti-pollution device designed to trap particles in diesel exhaust before they can escape into the atmosphere.

- **Active regeneration**



- Decreased ability of the lungs to function properly.
- A long list of breathing problems: shortness of breath, coughing, wheezing, chest tightness, headaches and nausea.
- Pronounced allergic reactions.
- Reduced ability to exercise resulting in poor athletic performance.

Health problems



Resources

- http://www.transportation.anl.gov/engines/diesel_pm.html
- <http://www.epa.gov/otaq/invntory/overview/definitions.htm>
- [http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_ppah_pguiAirborneParticularMatter/\\$FILE/HandbookAirborneParticularMatter.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_ppah_pguiAirborneParticularMatter/$FILE/HandbookAirborneParticularMatter.pdf)
- http://www.powerscorecard.org/issue_detail.cfm?issue_id=3
- <http://crf.sandia.gov/index.php/combustion-research-facility/combustion-chemistry/combustion-kinetics/chemistry-of-particulate-formation/>
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