

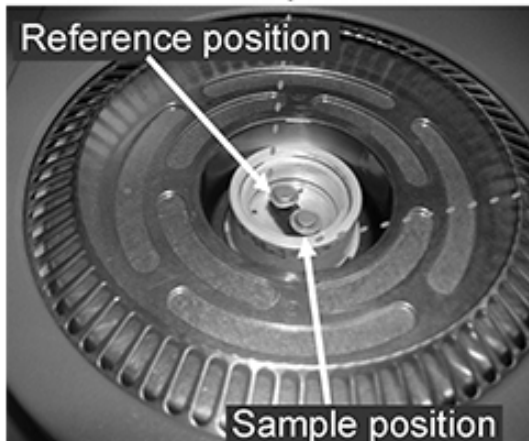
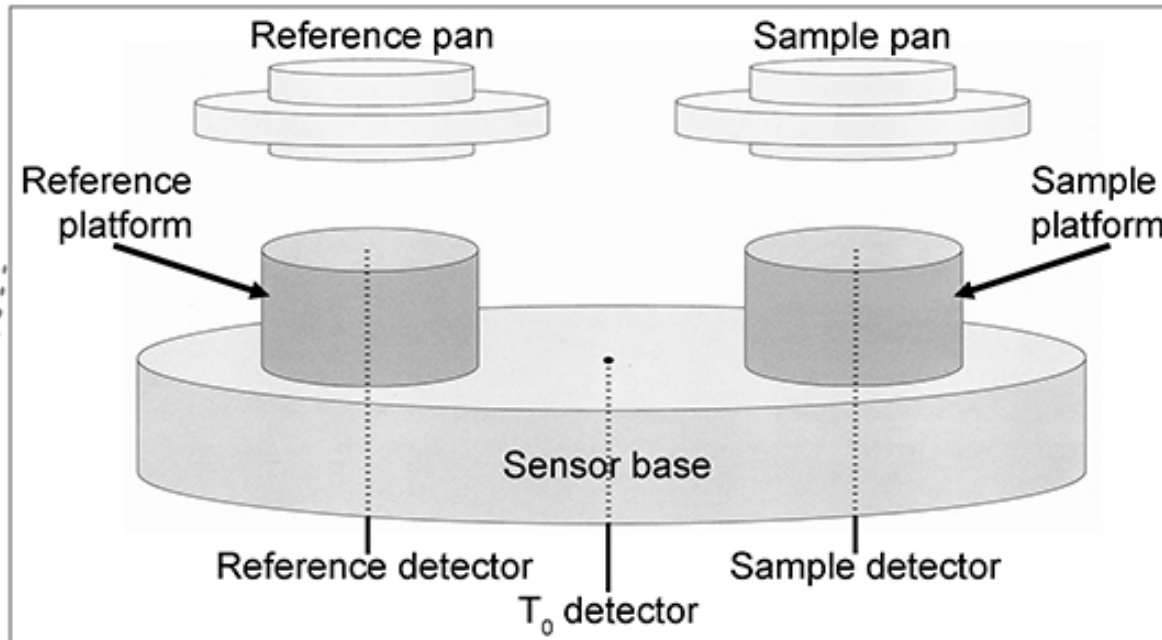


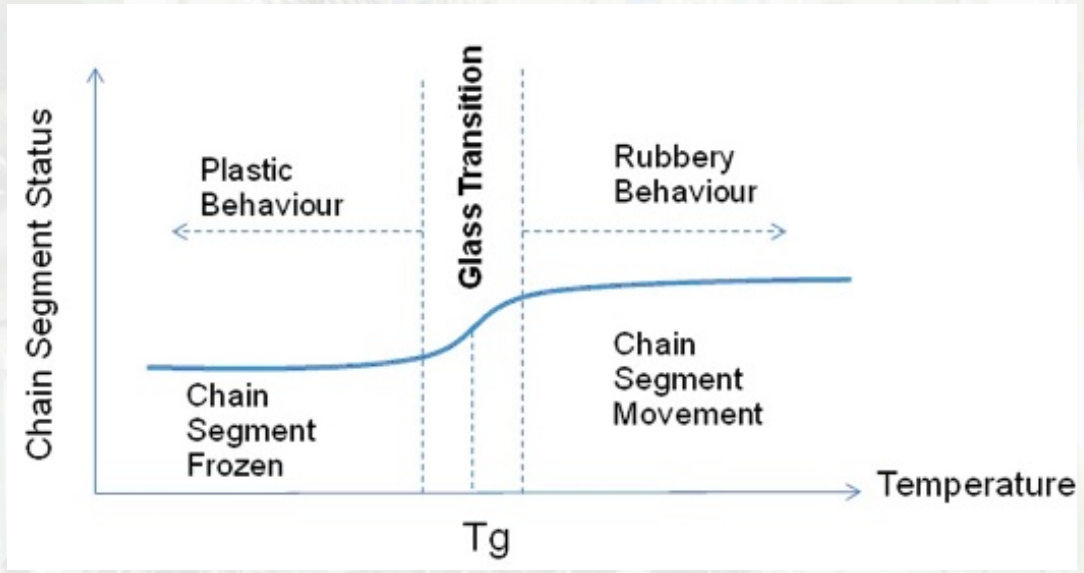
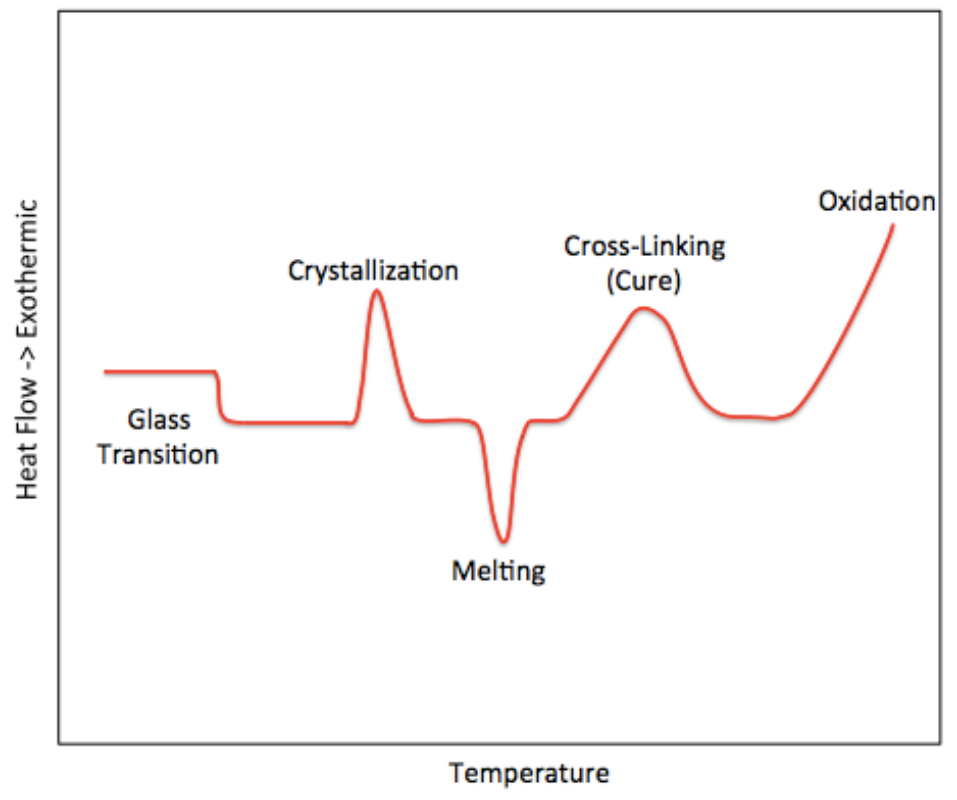
# FAMU-FSU COLLEGE OF ENGINEERING

## Introduction to Differential Scanning Calorimetry

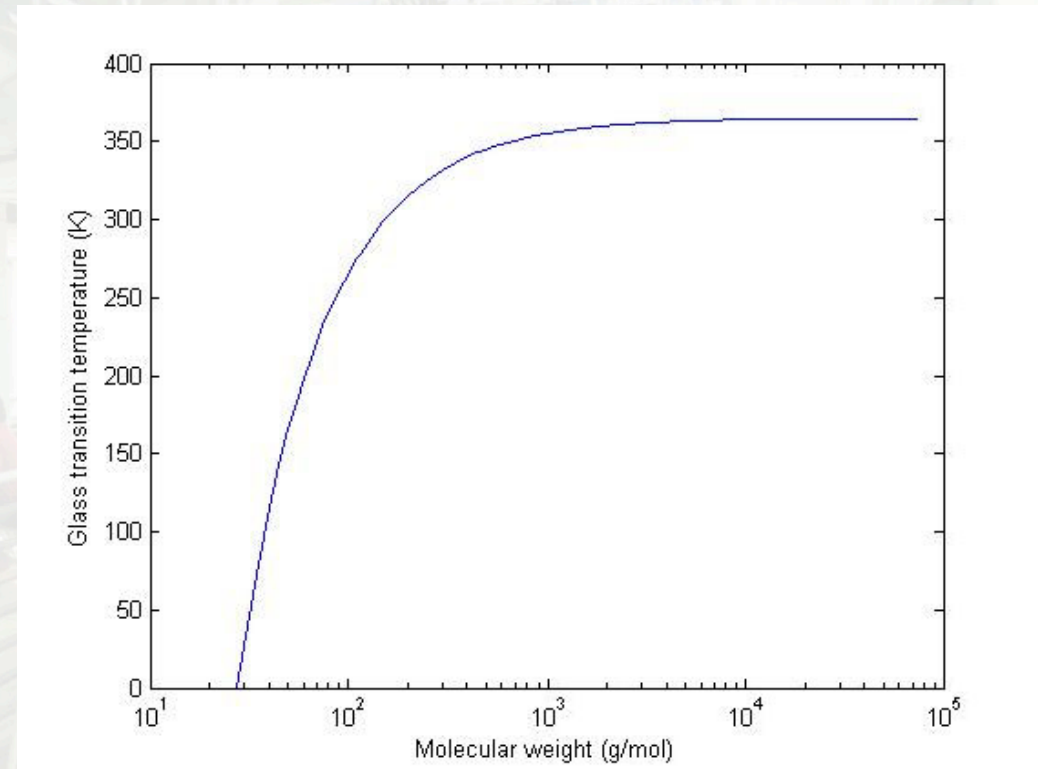
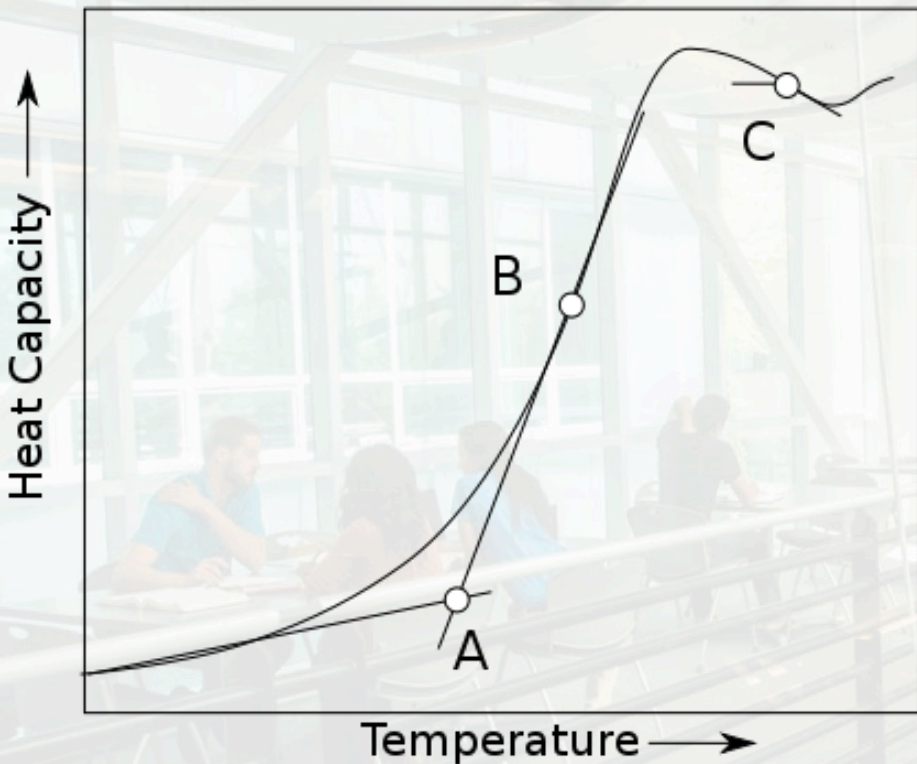


# Introduction





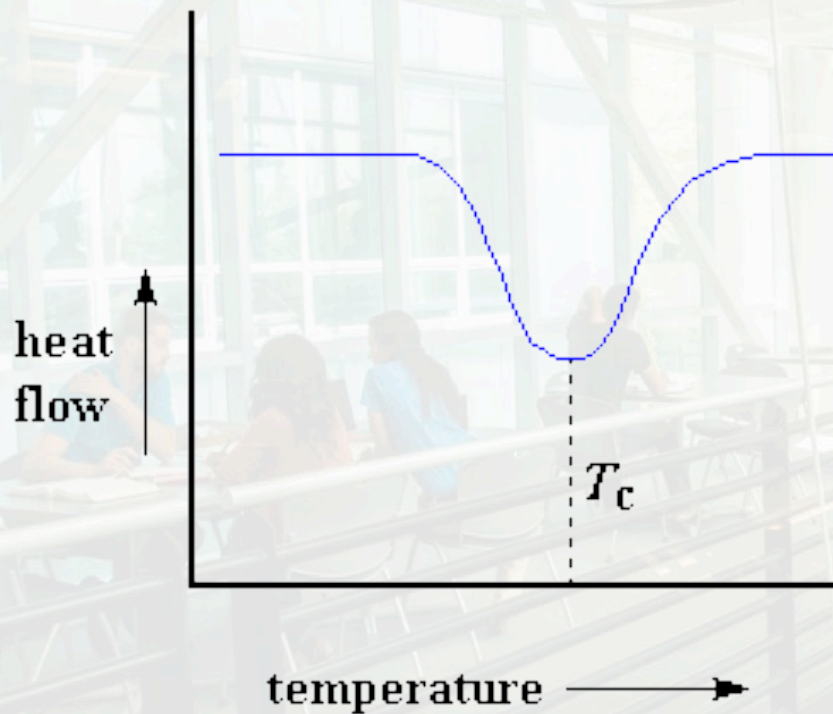
# Glass Transition Temperature



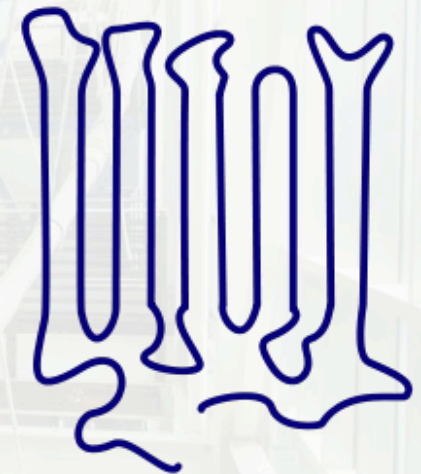
$$T_g = T_{g,\infty} - \frac{K}{M_n}$$



# Crystallization Temperature



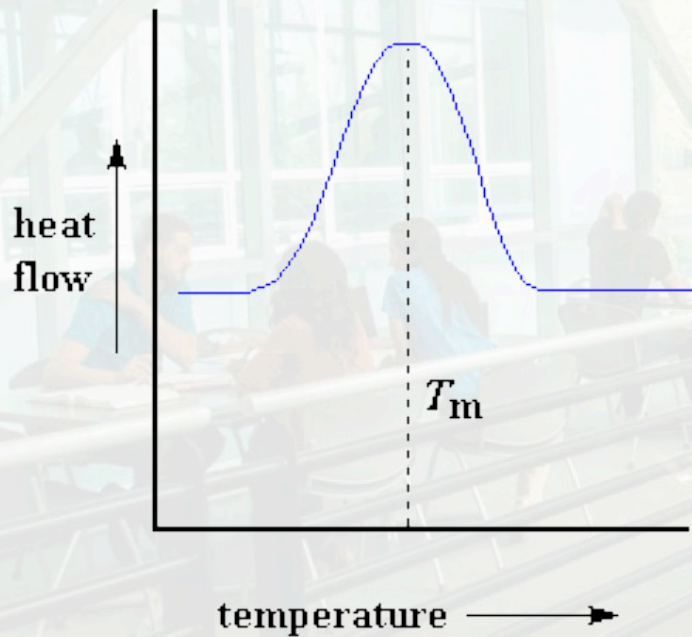
Amorphous



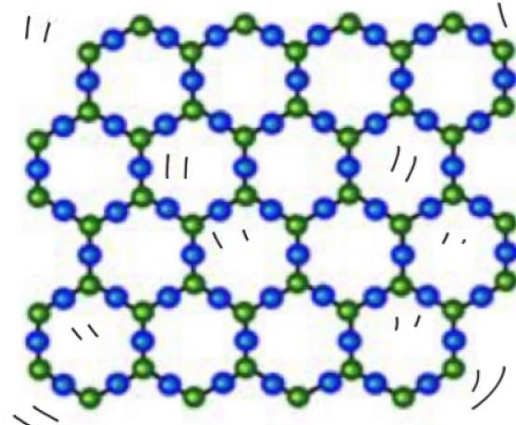
Semicrystalline



# Melt Temperature

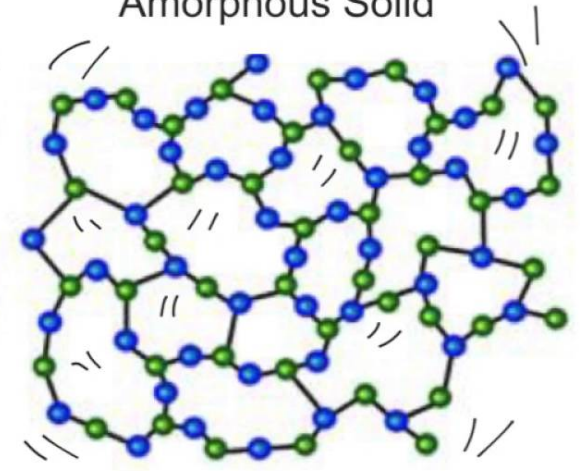


Crystalline Solid



Atoms vibrate in place in a fixed pattern

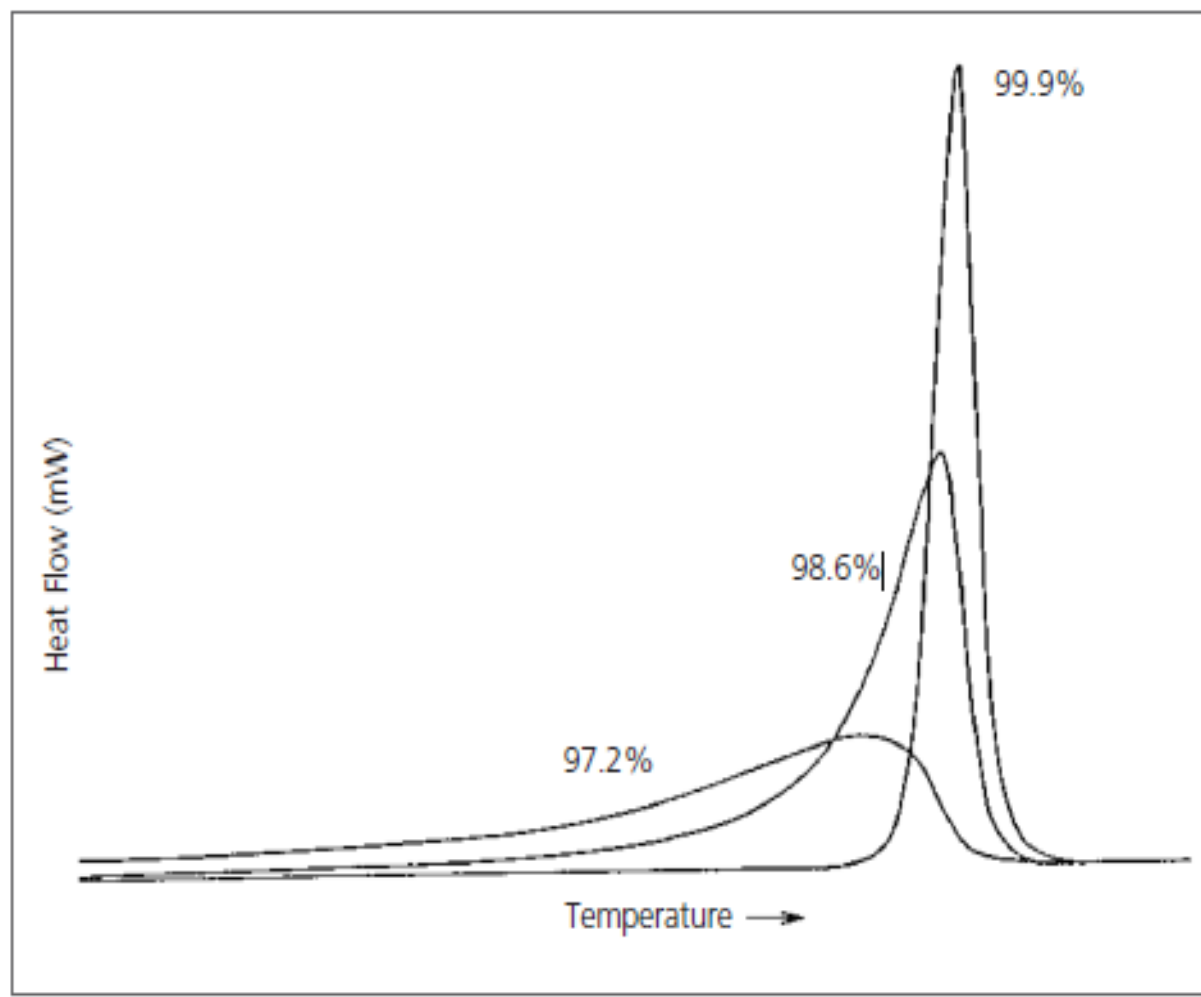
Amorphous Solid



Atoms vibrate in place in more random arrangements



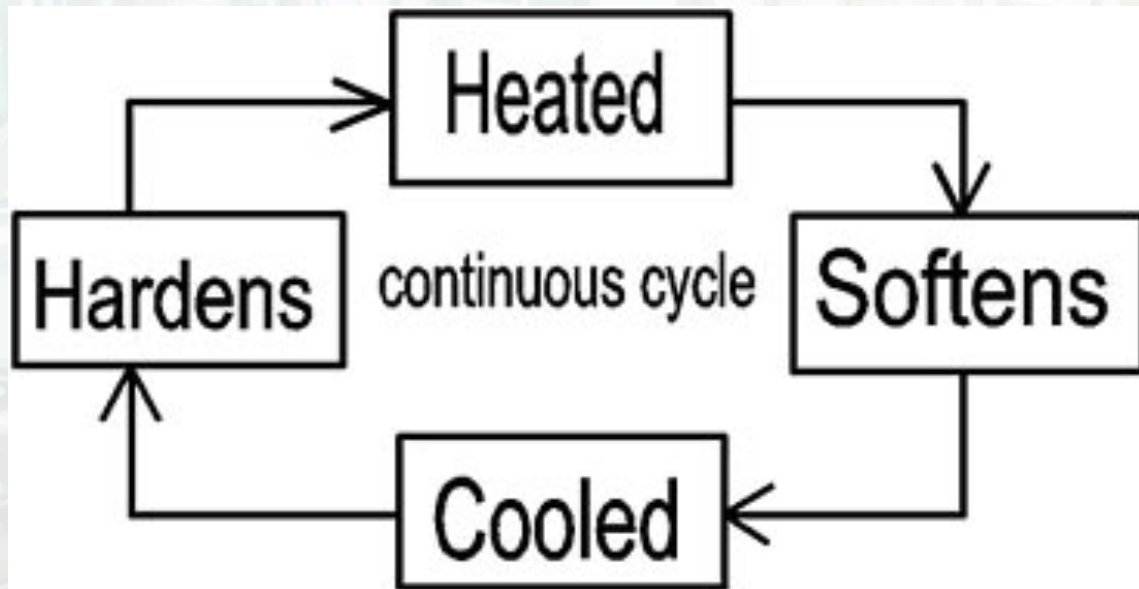
# Melt Temperature



$$\%Crystallinity = \frac{\Delta H_{experimental}}{\Delta H_{theoretical}}$$



# Thermoplastic Polymers

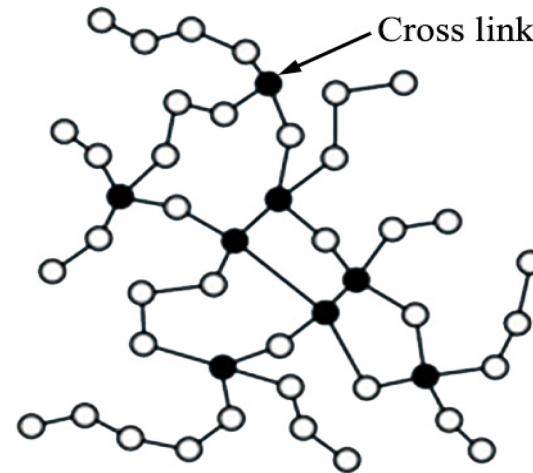




# Thermoset Polymers



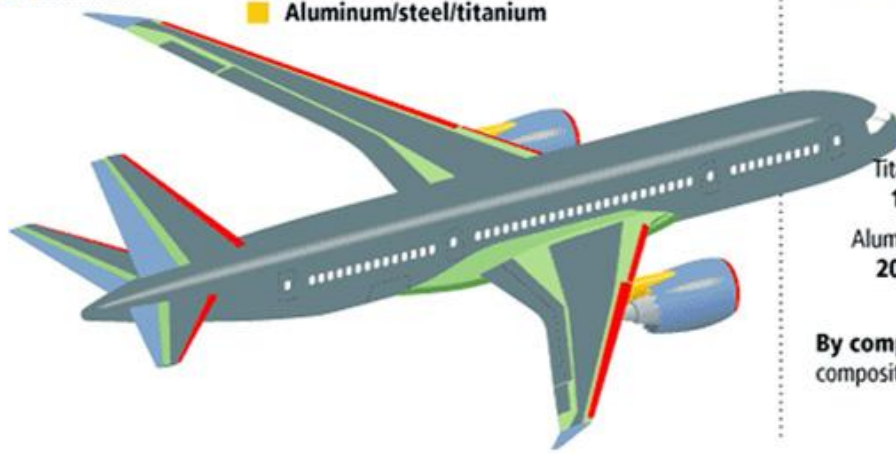
Thermoplastic resins



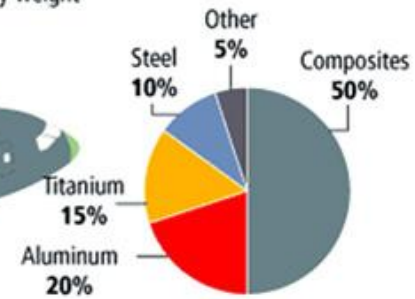
Thermosetting resins

## Materials used in 787 body

- Fiberglass
- Aluminum
- Carbon laminate composite
- Carbon sandwich composite
- Aluminum/steel/titanium



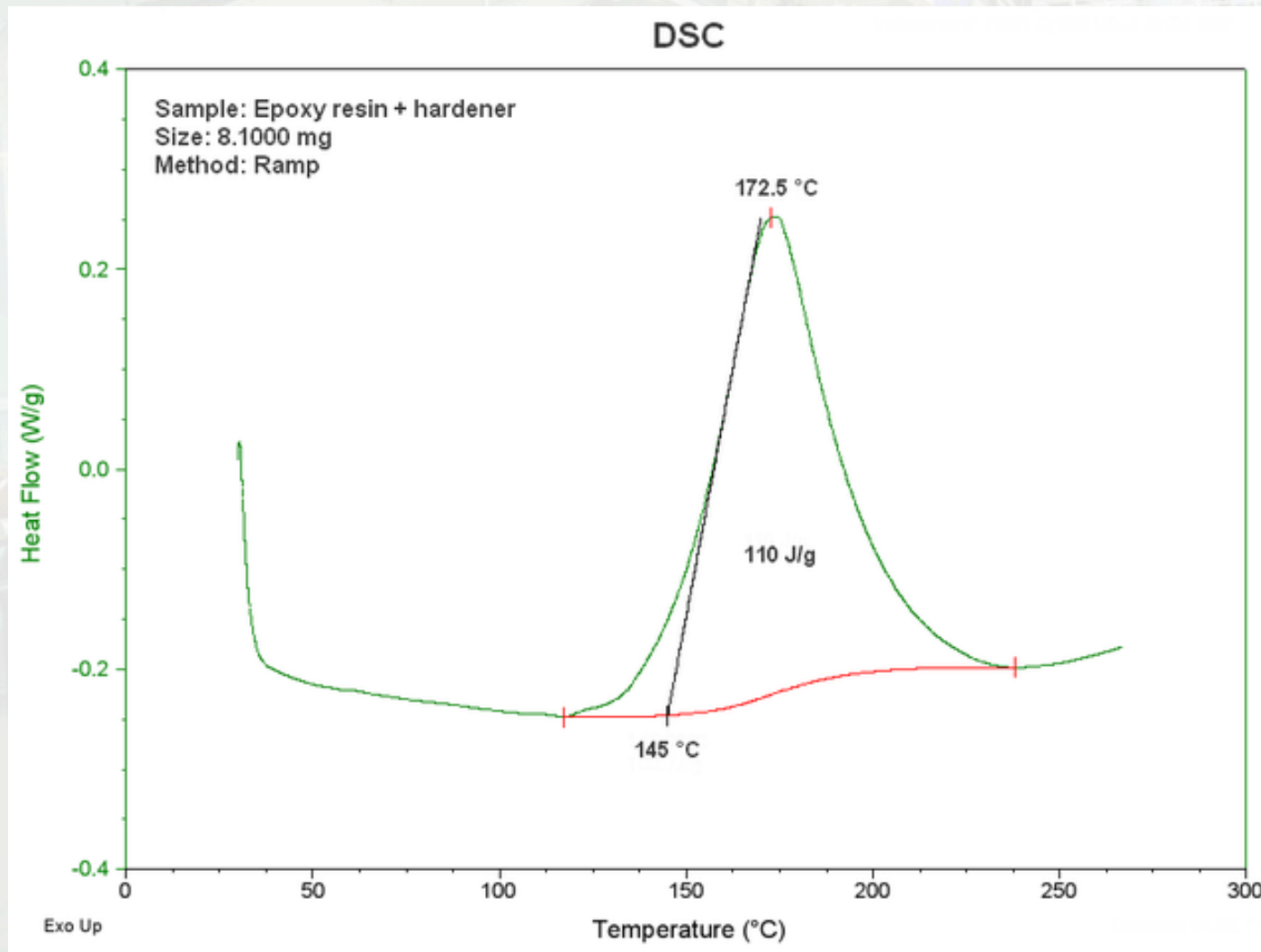
## Total materials used By weight



By comparison, the 777 uses 12 percent composites and 50 percent aluminum.



# Crosslinking



# Data Analysis

