

# MSE 310

## Kinetics and Microstructural Evolution

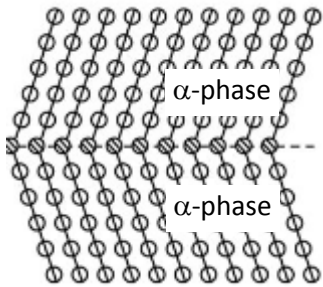
(2016-2017 Spring)

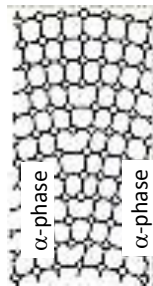
### QUIZ 1

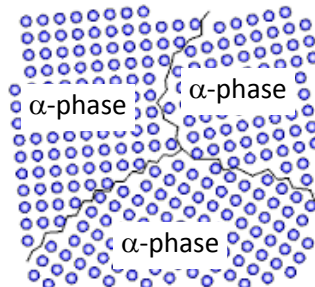
1) Fill in the blanks as "high", "low" or "zero"

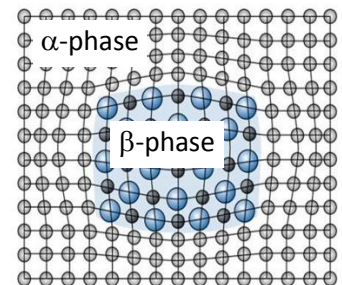
Type of Interface	Strain Energy	Chemical Energy
Coherent Boundary		
High angle grain boundary		
Coherent twin boundary		
Low angle grain Boundary		

2) Write down the name of boundaries









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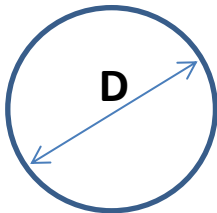
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### QUIZ 2

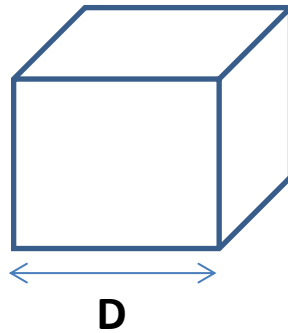
1-What is surface tension?

2-Which shape will be preferred by liquid water droplet and

**Spherical shape**



**Cubic shape**



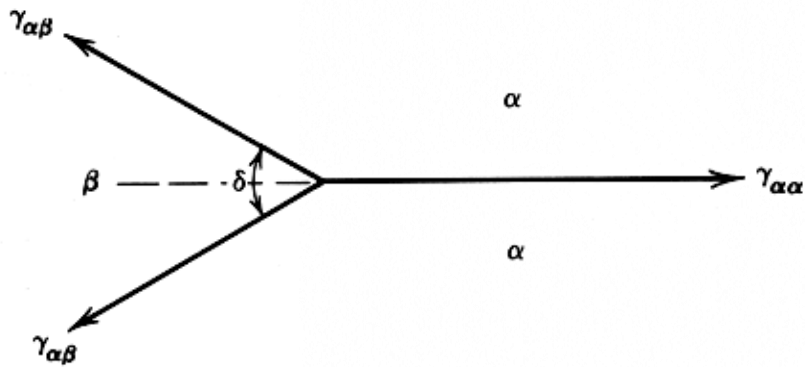
## MSE 310

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### QUIZ 3

1-Consider a  $\beta$ -phase in the grain boundary of  $\alpha$ -phases in 2-dimension as shown below. What will be the shape of  $\beta$ -phase if  $2\gamma_{\alpha\beta} = \gamma_{\alpha\alpha}$ .



2-What is the reason of grain boundary segregation in metals?

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#### **QUIZ 4**

**1-**Draw schematically grains with 3, 6 and 8 sided, and show how the shape and size of grains change when they are heated.

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**QUIZ 5**

**1-**What is rate of a reaction or transformation? Write down also Arrhenius rate constant.