Assignment 8

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Question 1

This is the structure of the micro structure obtained for the equaixed grains for a computational grid of 1024×1024 and nucleation sites $= 500$

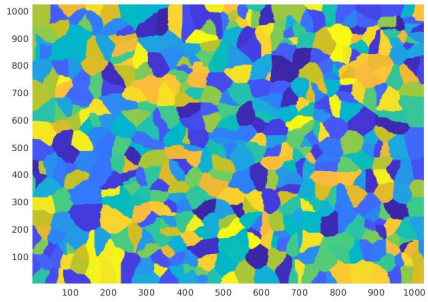

Figure 1: Equaixed Grains

This is the structure of the micro structure obtained for the rolled state grains for a computational grid of 1024×1024 and nucleation sites $= 500$

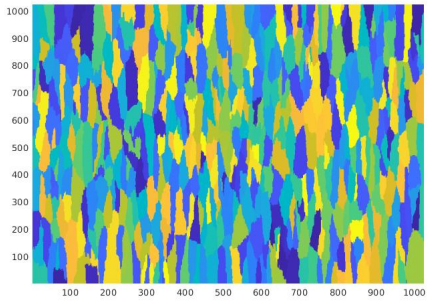

Figure 2: Rolled state grains

Question 2

This is a periodic microstructure:

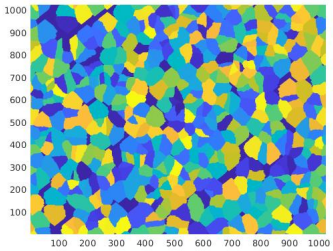

Figure 3: Periodic structure

Question 3

1. Result for 100 grains initially:

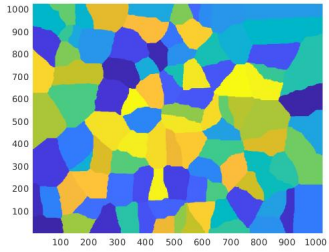

Figure 4: Microstructure with 100 grains

internal pixel count = 1011355
grain boundary count = 37221
triple point count = 331

2. Result for 500 grains initially:

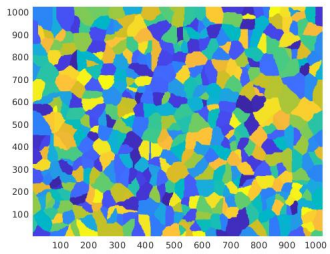

Figure 5: Microstructure with 500 grains

internal pixel count = 962880
grain boundary count = 85696
triple point count= 1886

3. Result for 1000 grains initially:

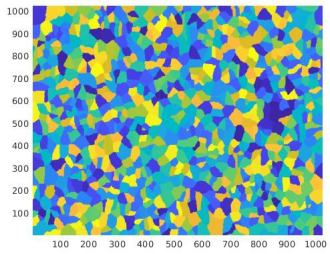

Figure 6: Microstructure with 1000 grains

internal pixel count = 926969
grain boundary count = 121607
triple point count = 3946

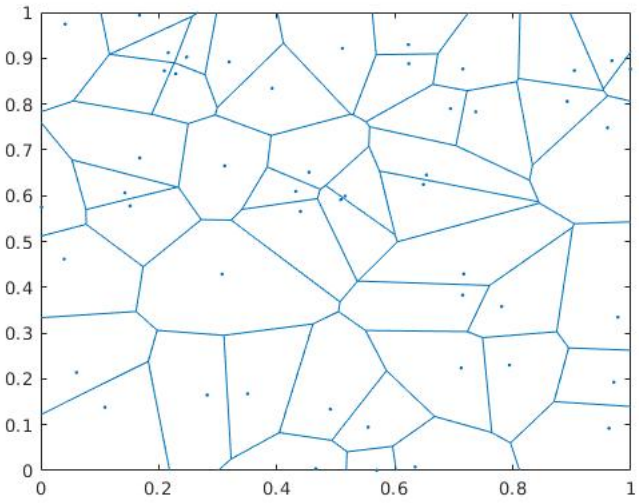

Figure 7: Microstructure using Voronoi Tessalation

Question 4