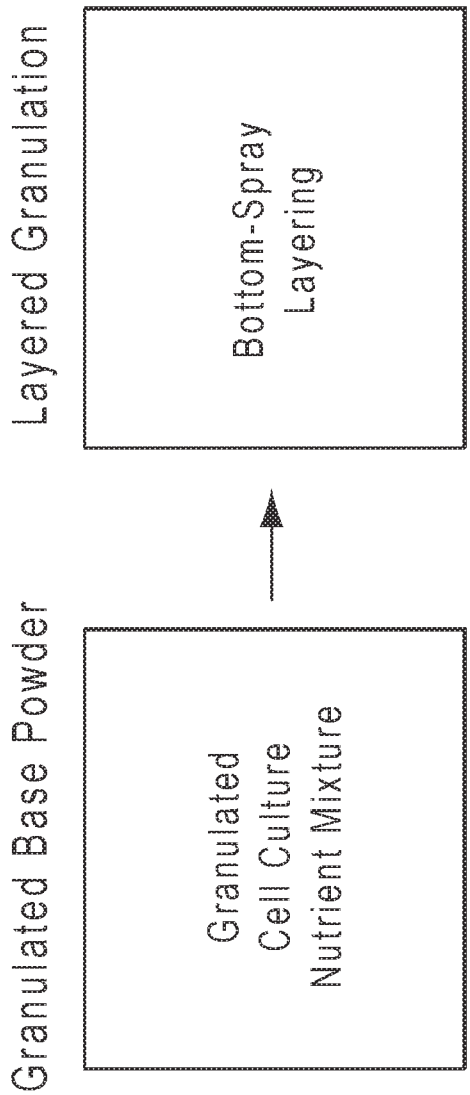
Figure 1: Exemplary Process 1 for Making Culture Media Layered Granule Formulations



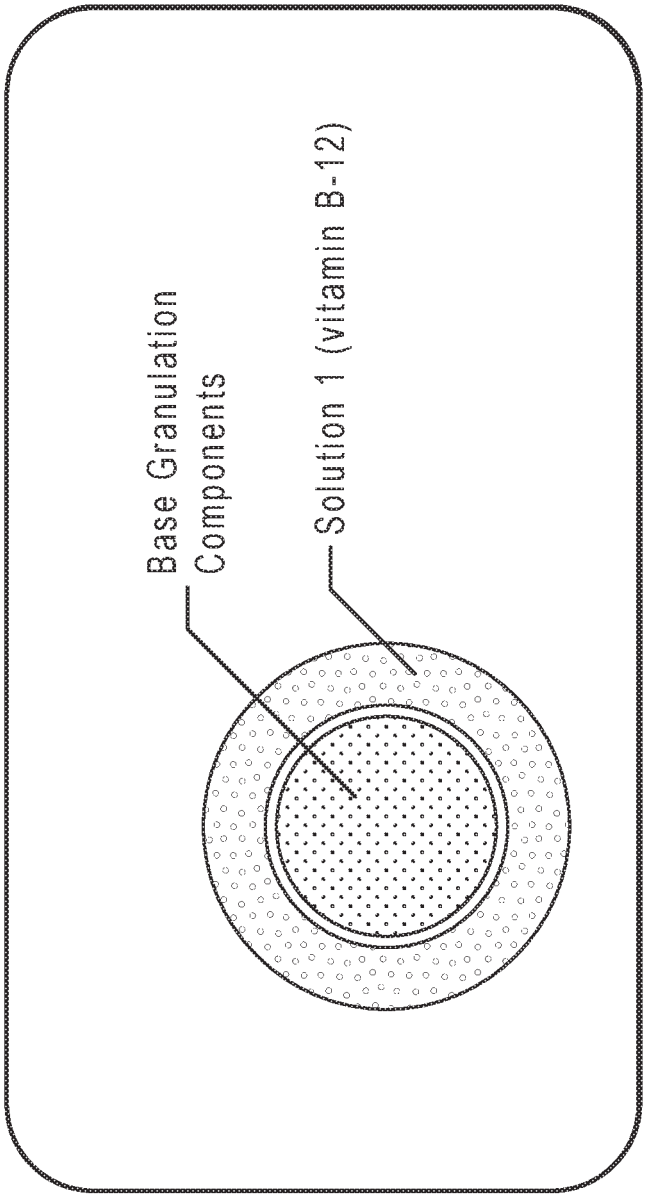


Figure 1a: Layered Granule Prototype-A
(Single Layer, Single Ingredient)

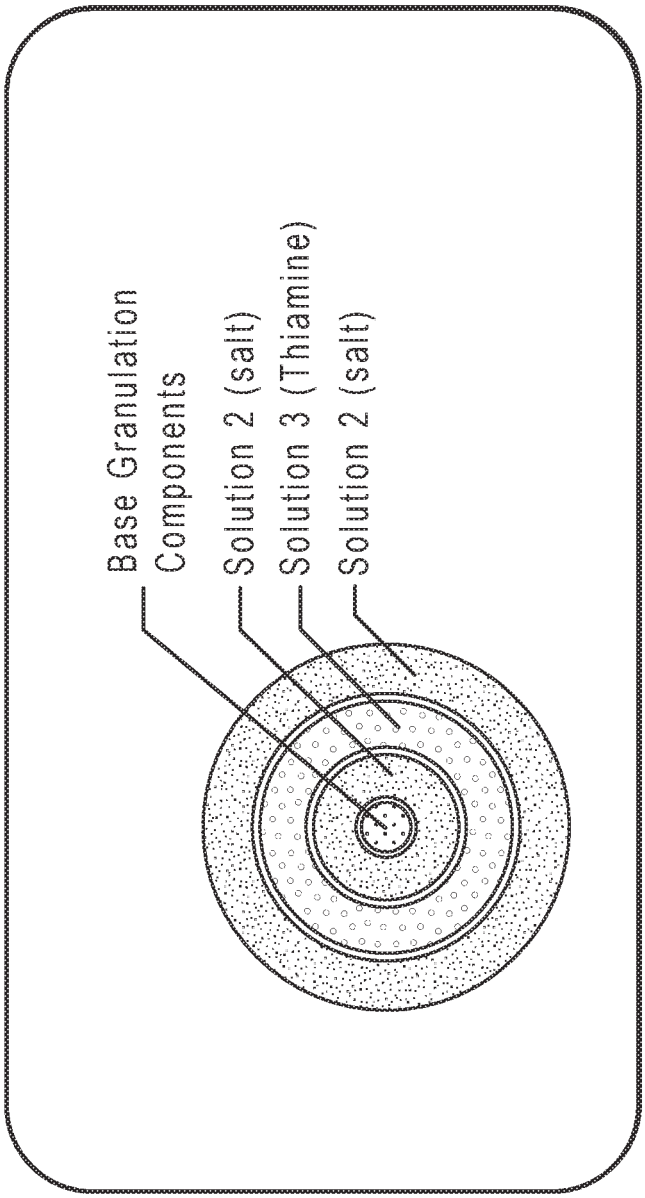
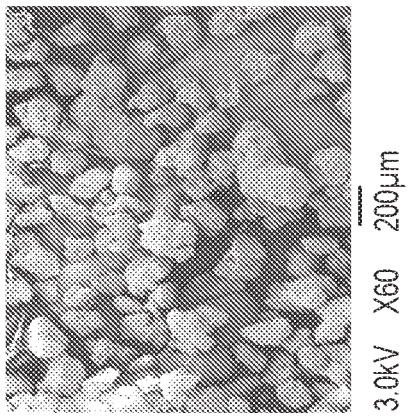
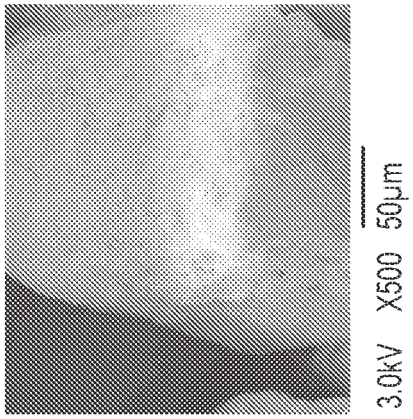
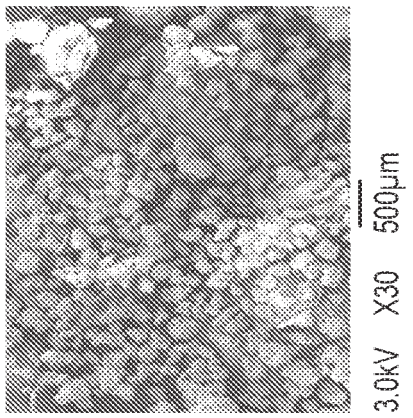


Figure 1b: Layered Granule Prototype-B
(Multi-Layered, Single Ingredient in each layer)

Figure 2a: SEM images of Layered Granules Prototype-A
(Single-Layer, Single Ingredient)







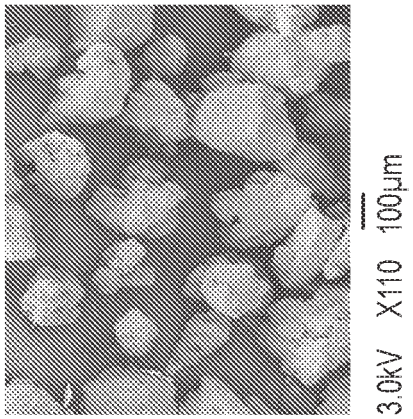


Figure 2b: SEM images of Layered Granules Prototype-B
(Multi-Layered, Single Ingredient)

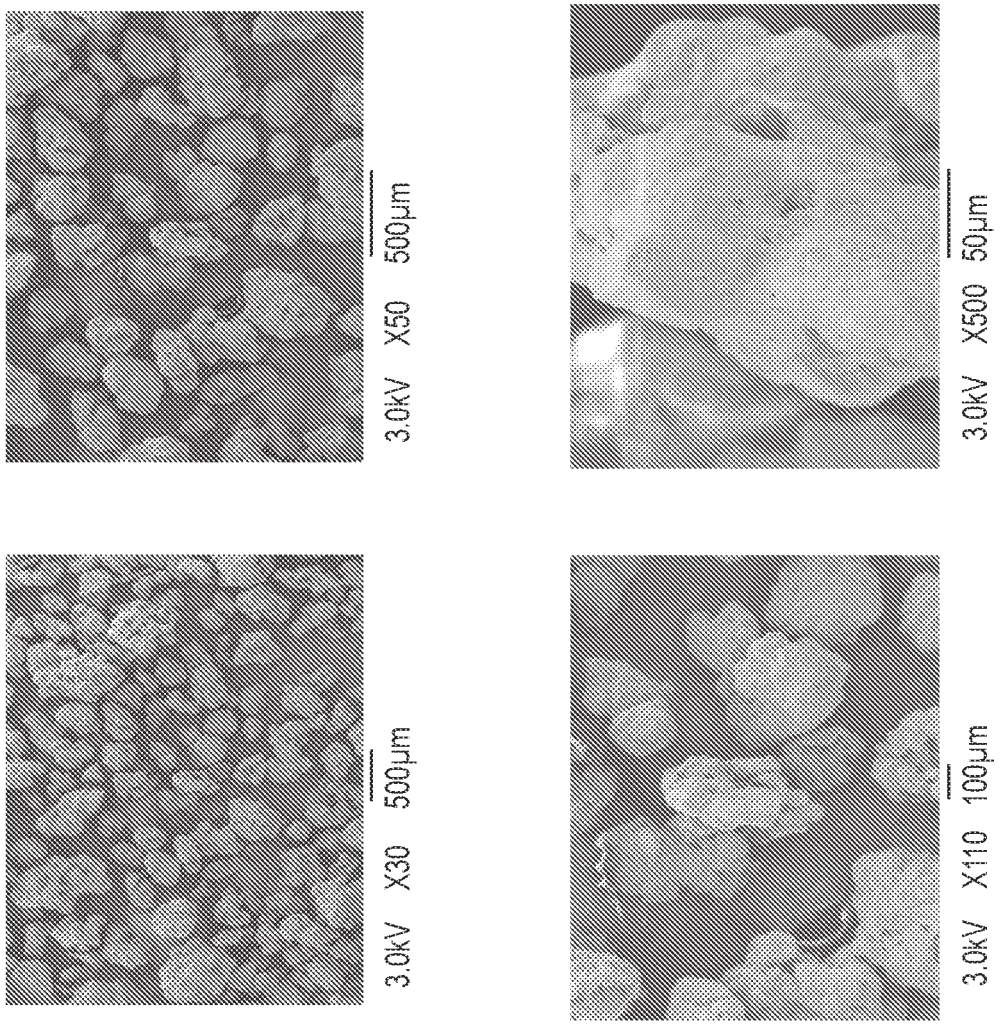


Figure 3a: Prototype A Layered Feed Cell Viability Assay

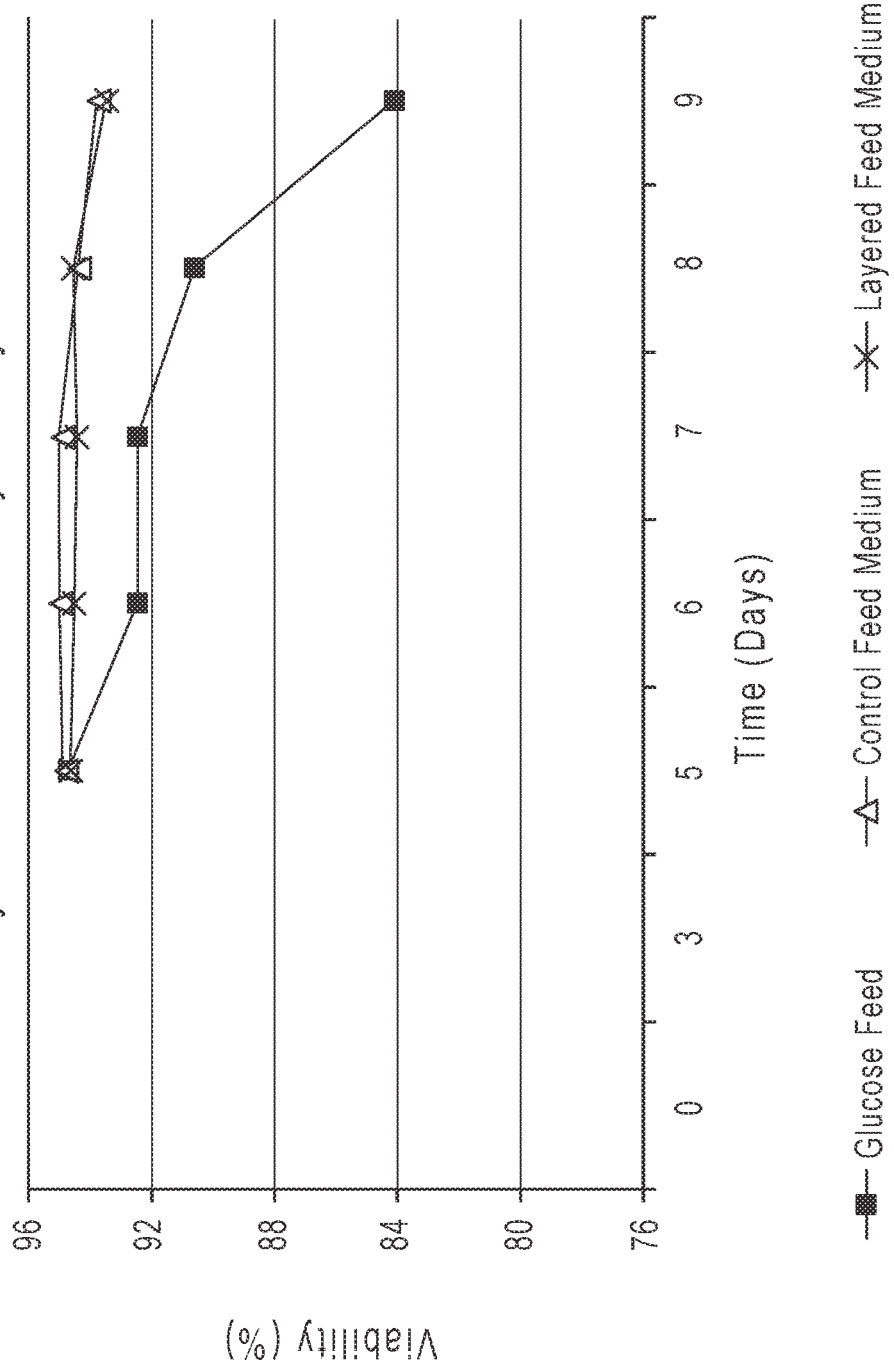


Figure 3b: Prototype A Layered Feed Cell Growth Assay

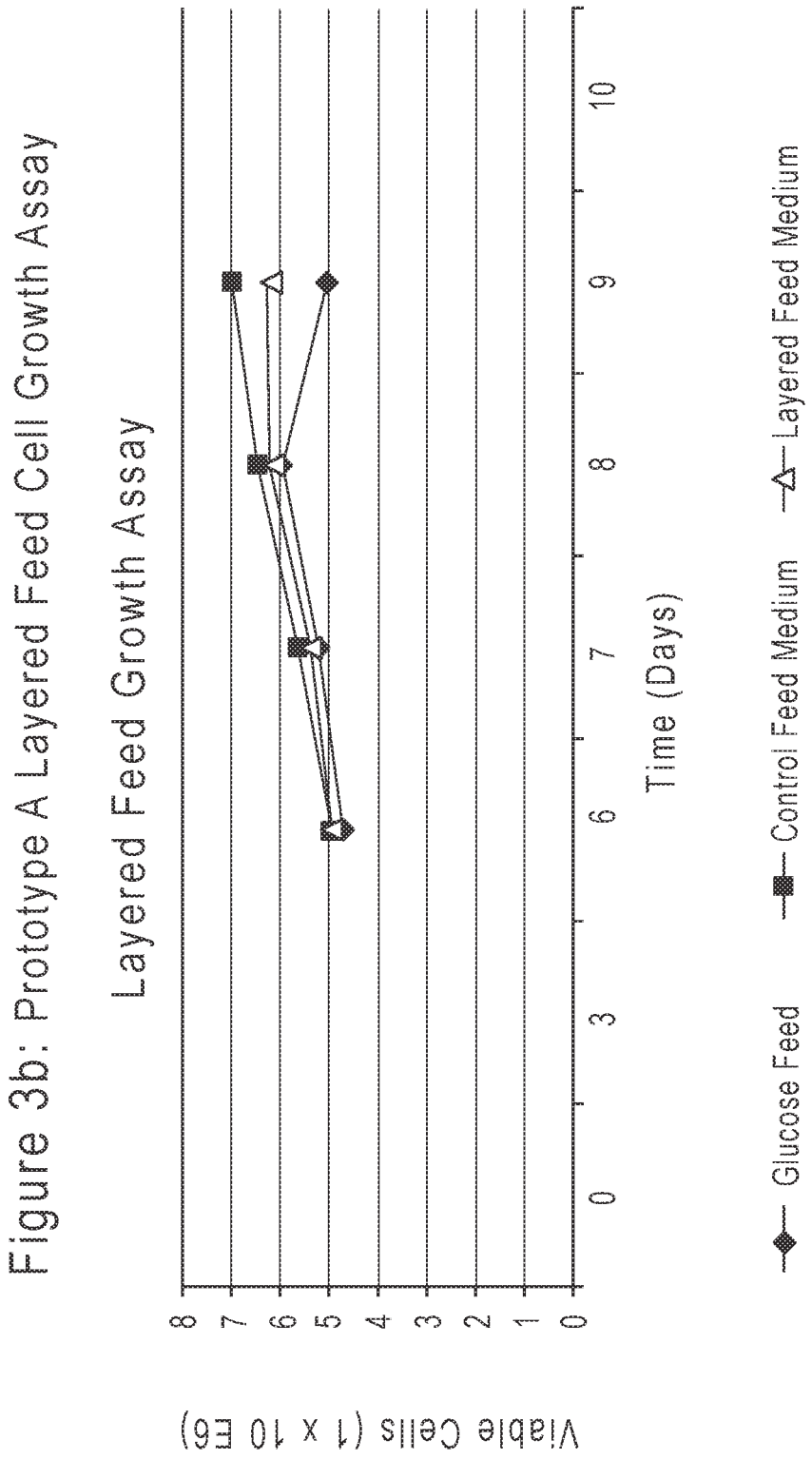


Figure 4: Exemplary Process 2 for Production of Layered Media/ Feed Granules for Cell Culture



Figure 5a: Cell Culture Media Layered Granules-Formulation 1

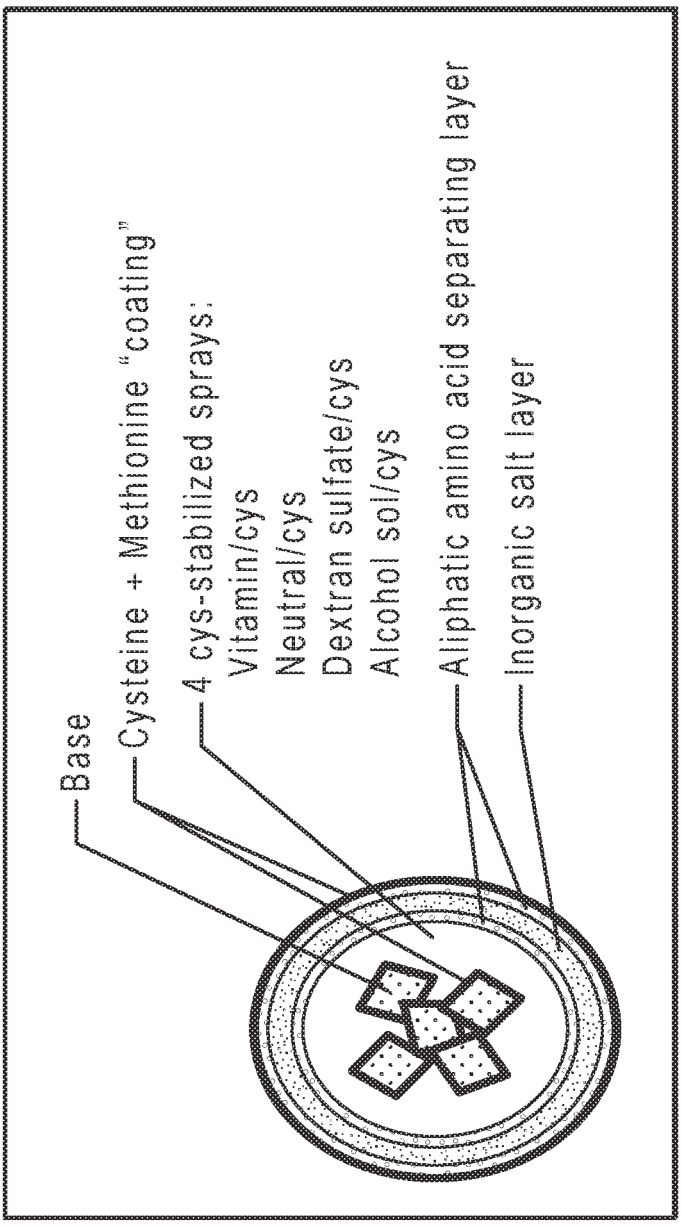


Figure 5b: Cell Culture Media Layered Granules - Formulation 2

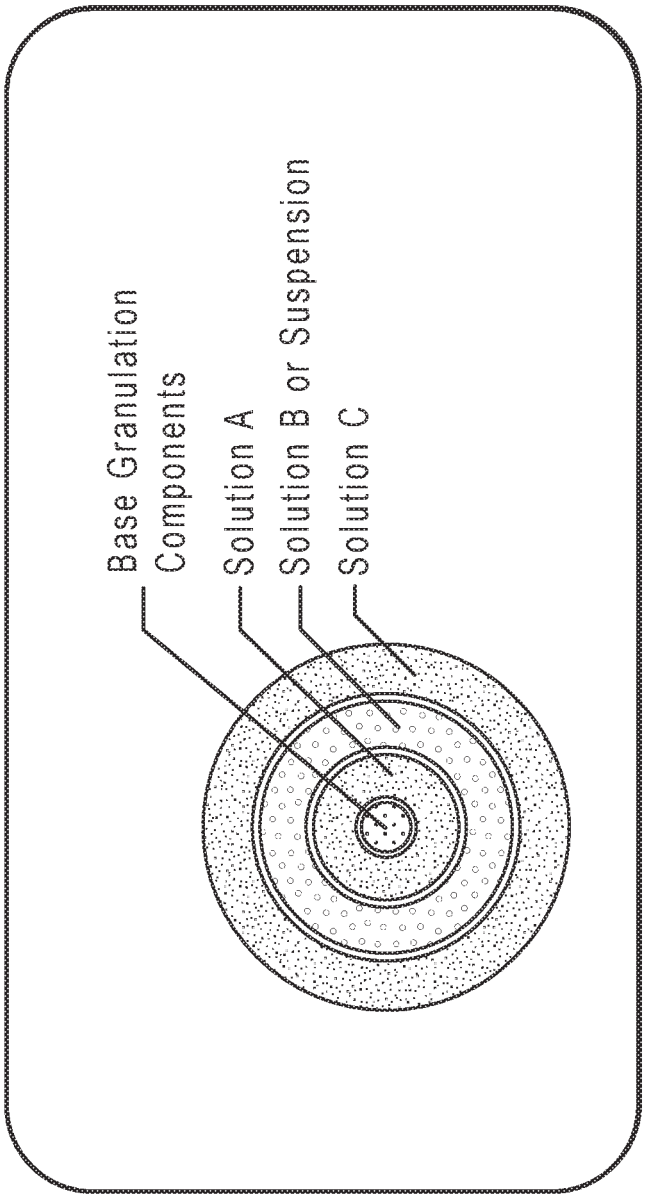


Figure 6a: Formulation 1 Particle Size Analysis

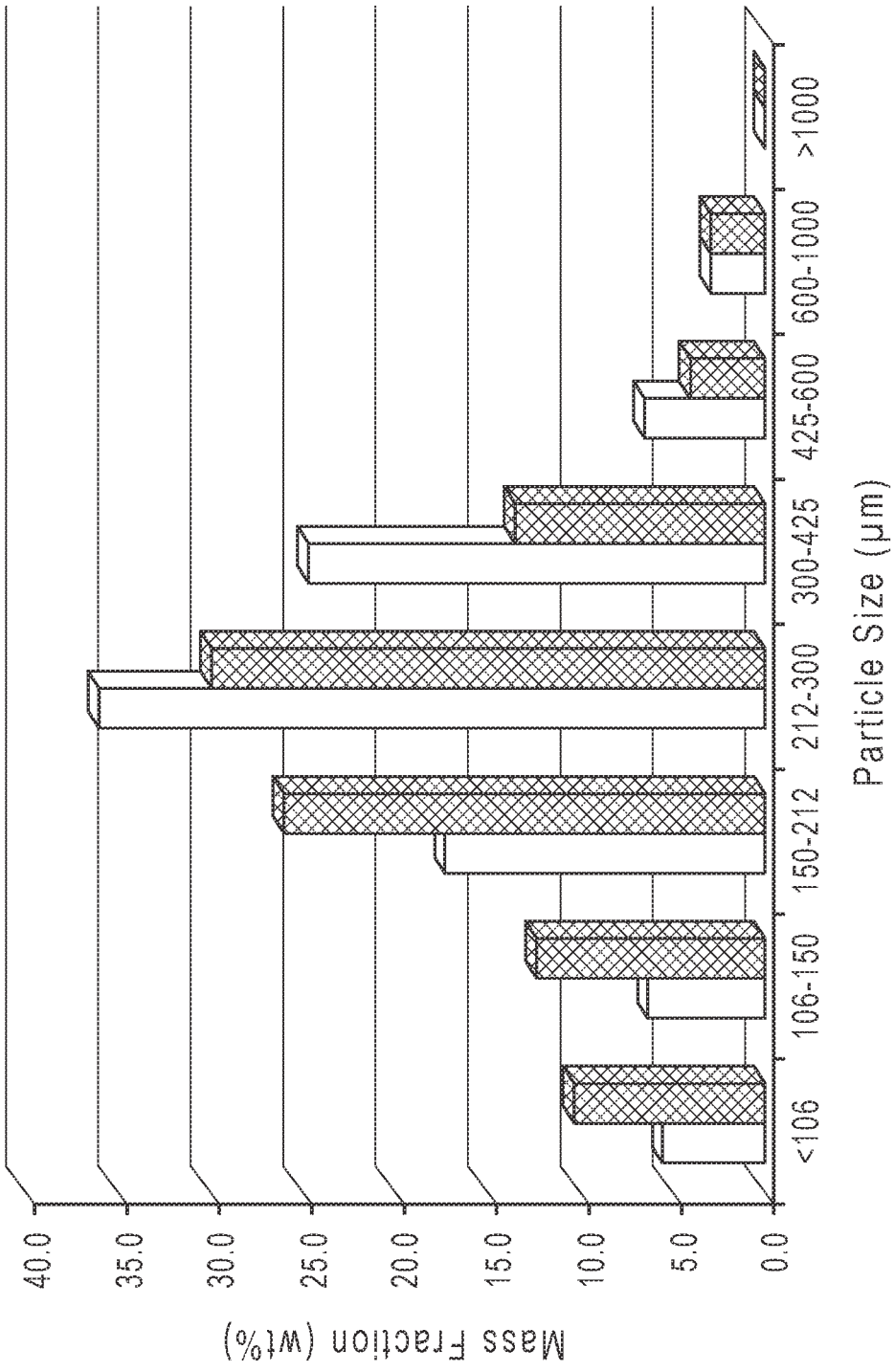


Figure 6b: Formulation 2 Particle Size Analysis

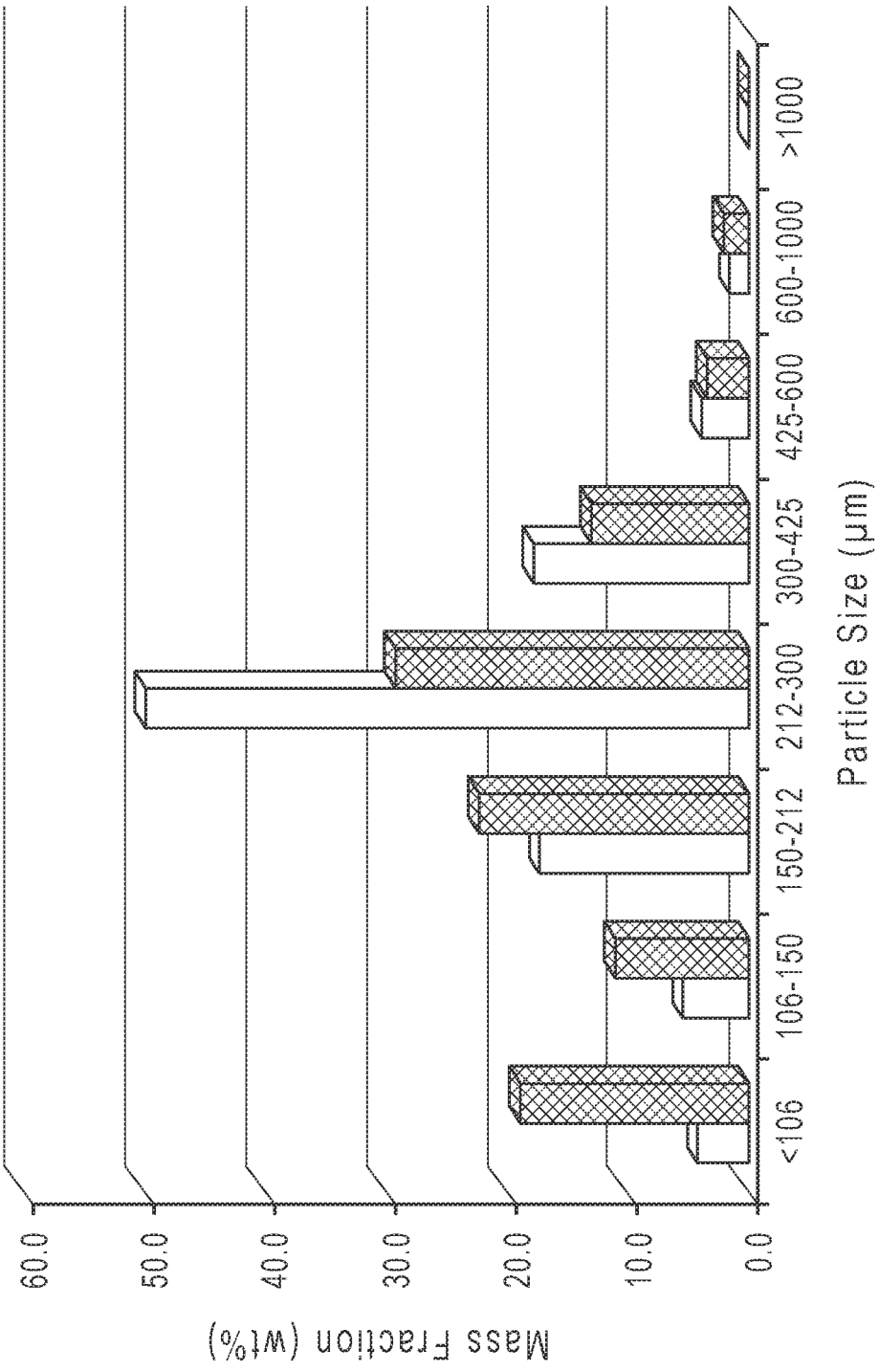


Figure 7a: Formulation 1 Cumulative Particle Size Analysis

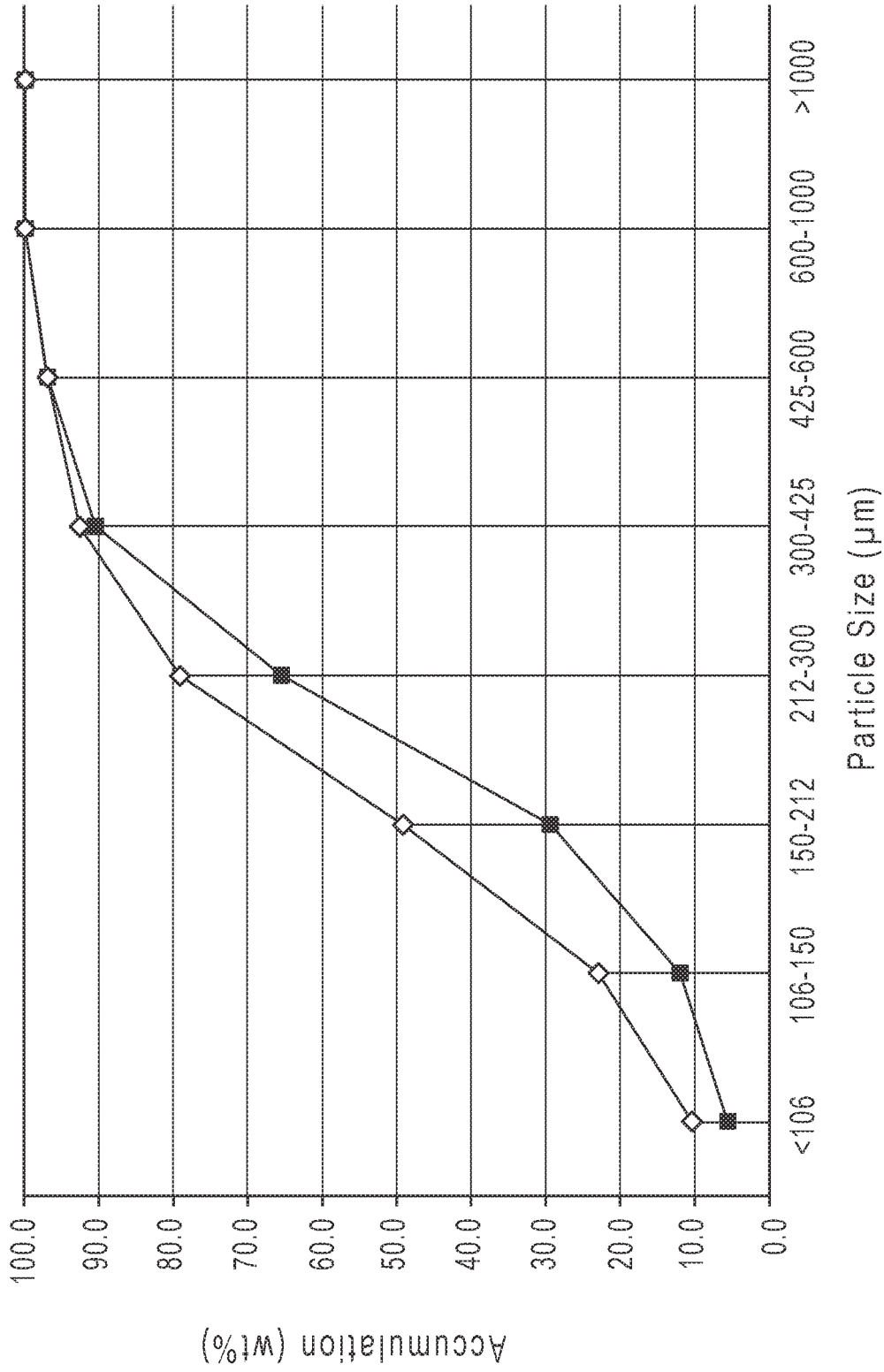


Figure 7b: Formulation 2 Cumulative Particle Size Analysis

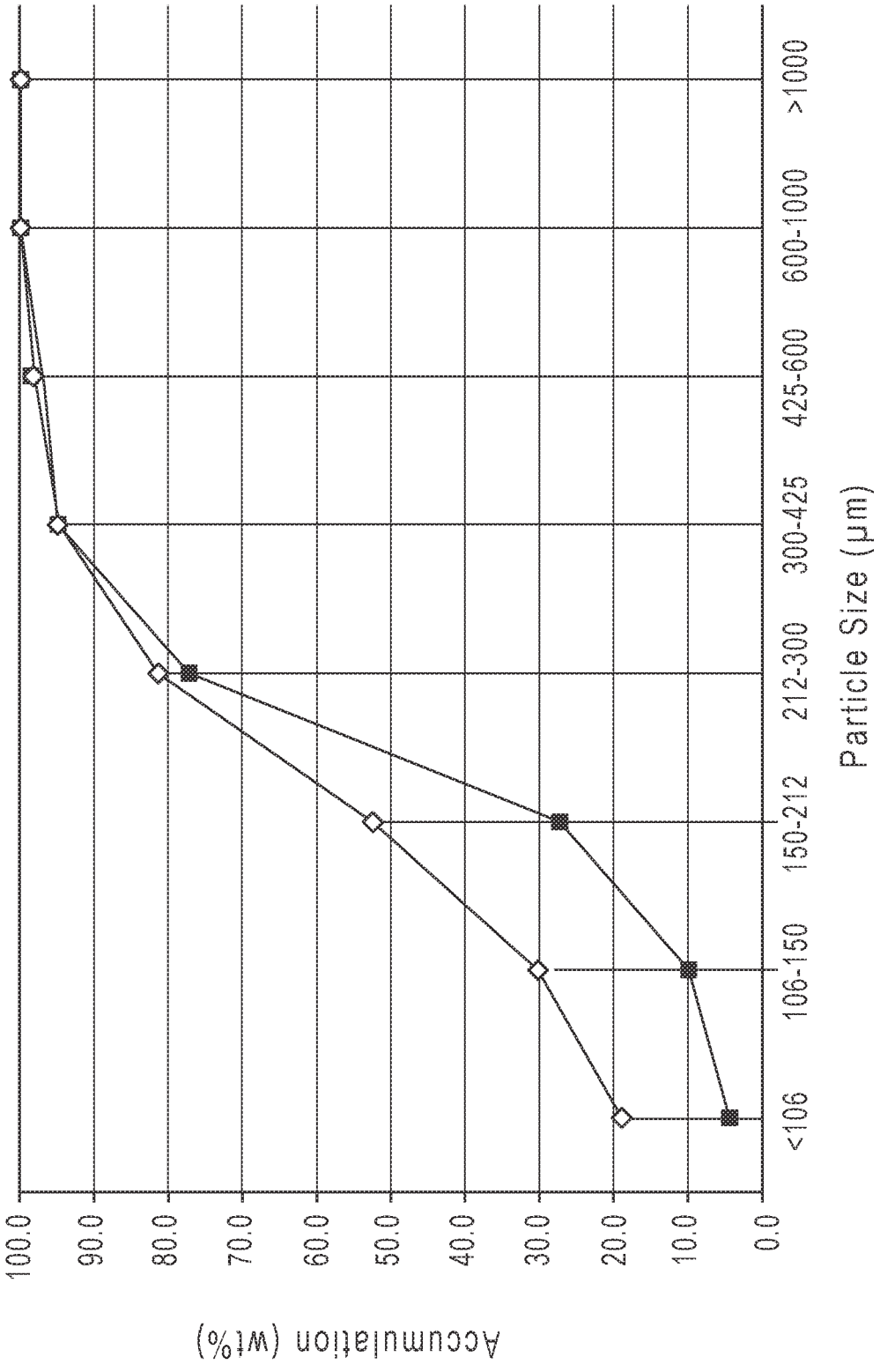
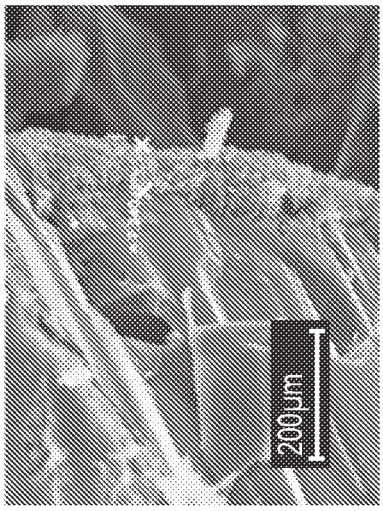
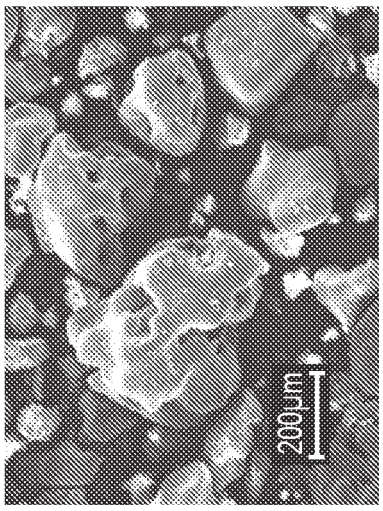


Figure 8a: Formulation 1 SEM

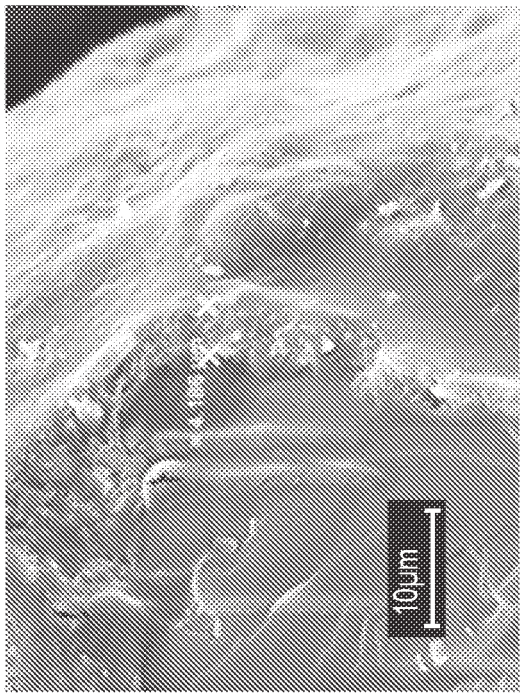


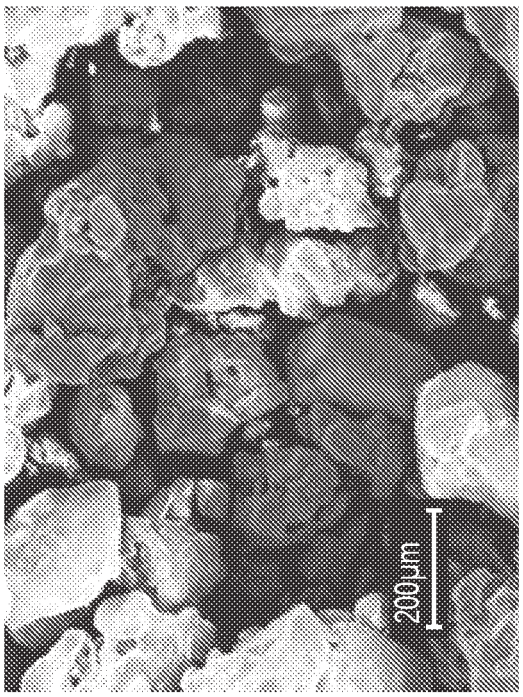
1500X SEM



100X SEM

Figure 8b: Formulation 2 SEM





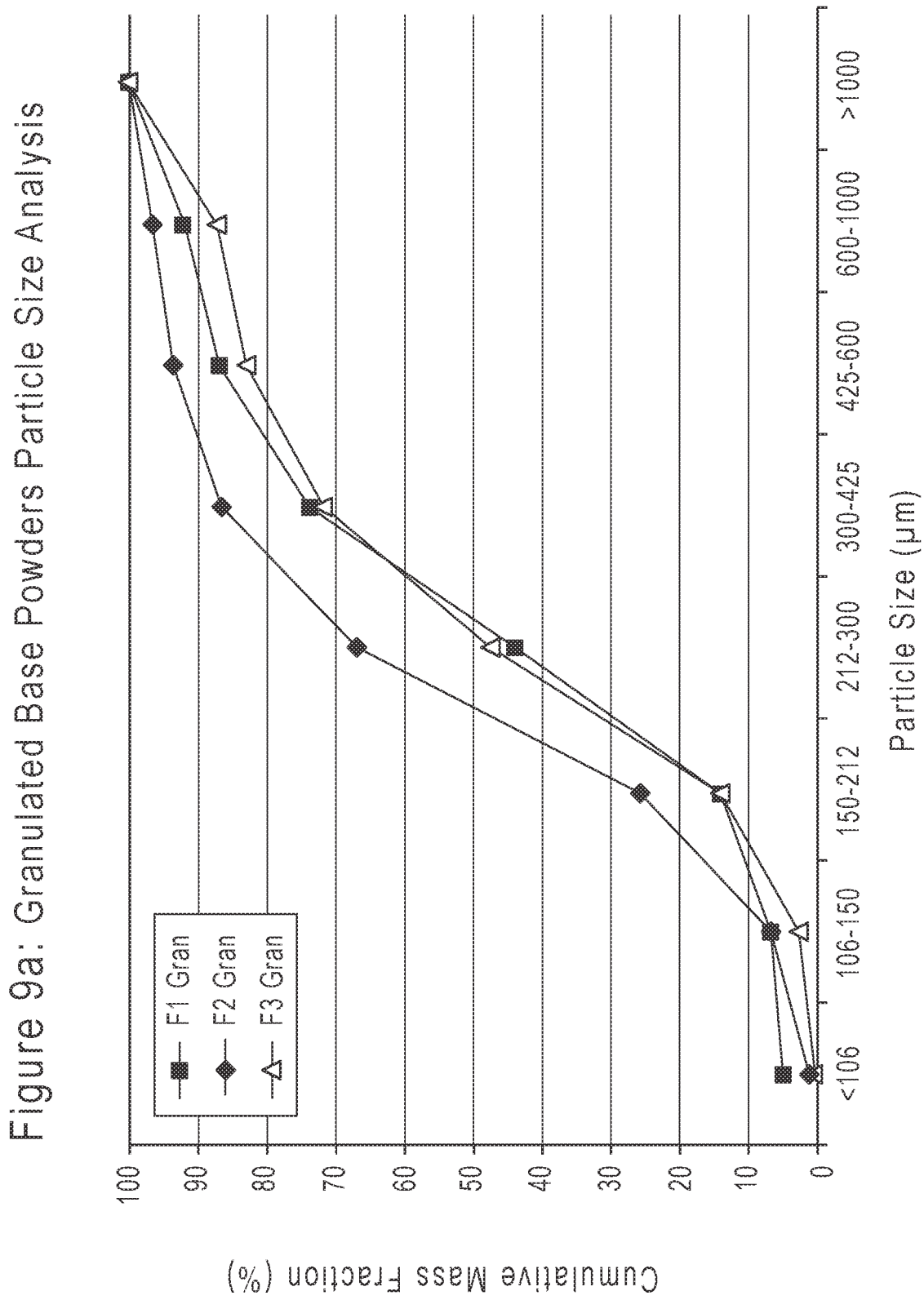

Figure 9a: Granulated Base Powders Particle Size Analysis
Cumulative Mass Fraction (%)
100
90
80
70
60
50
40
30
20
10
0
F1 Gran
F2 Gran
F3 Gran
<106
106-150
150-212
212-300
300-425
425-600
600-1000
>1000
Particle Size (µm)

Figure 9b: Granulated Base Powders Particle Size Analysis Bar Graph

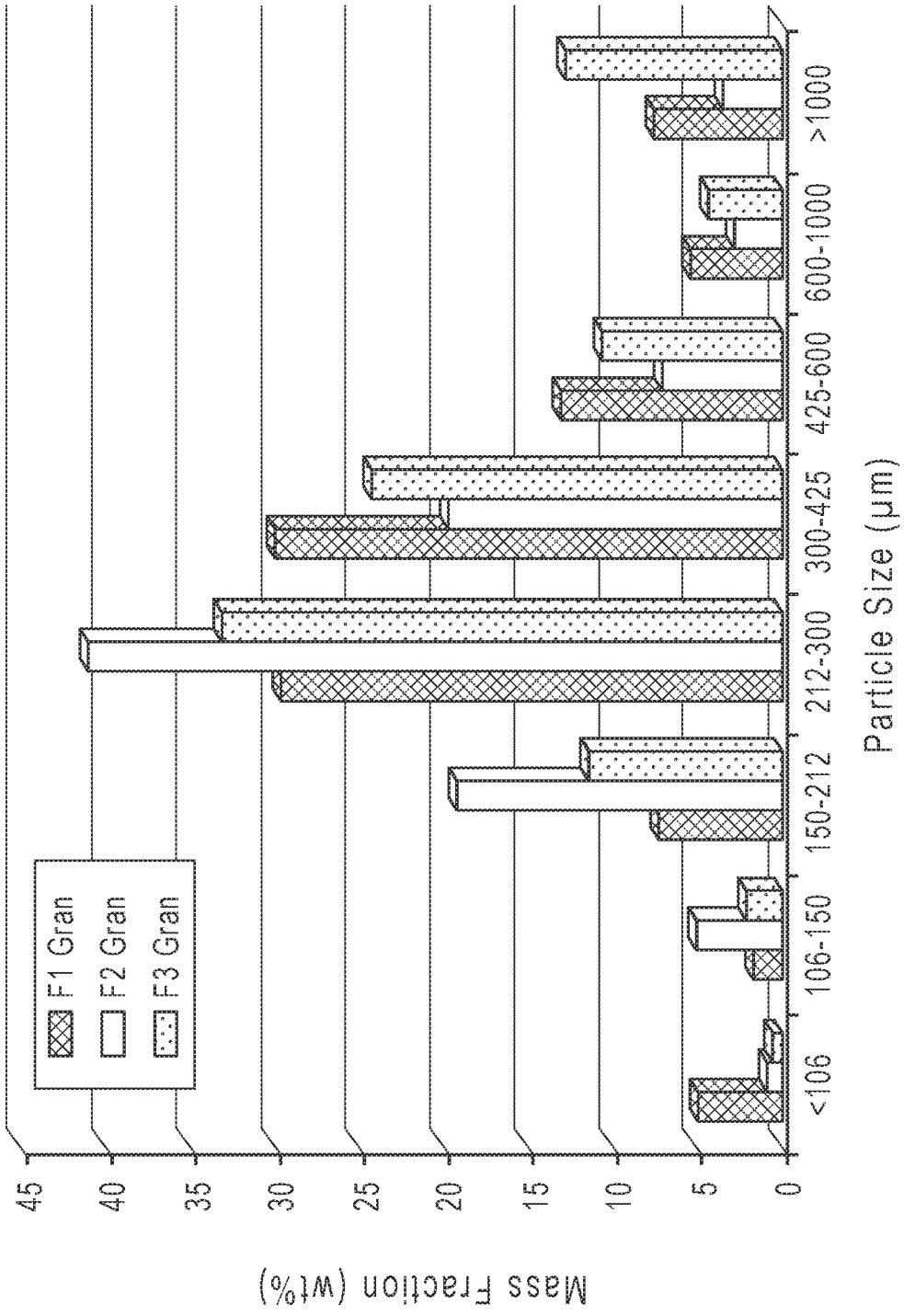


Figure 10a: Milled Granulated Base Powders Particle Size Analysis

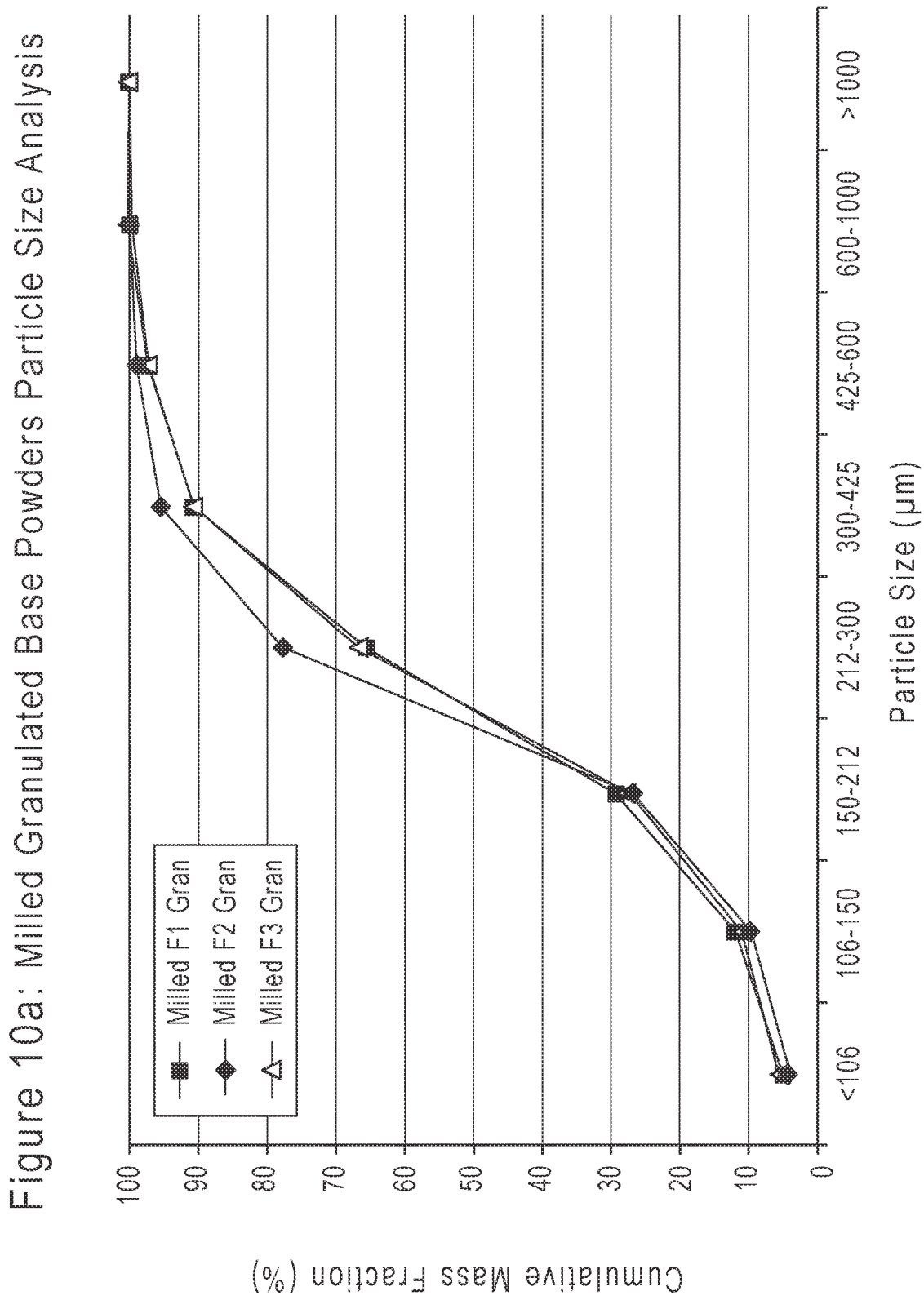


Figure 10b: Milled Granulated Base Powders Particle Size Analysis Bar Graph

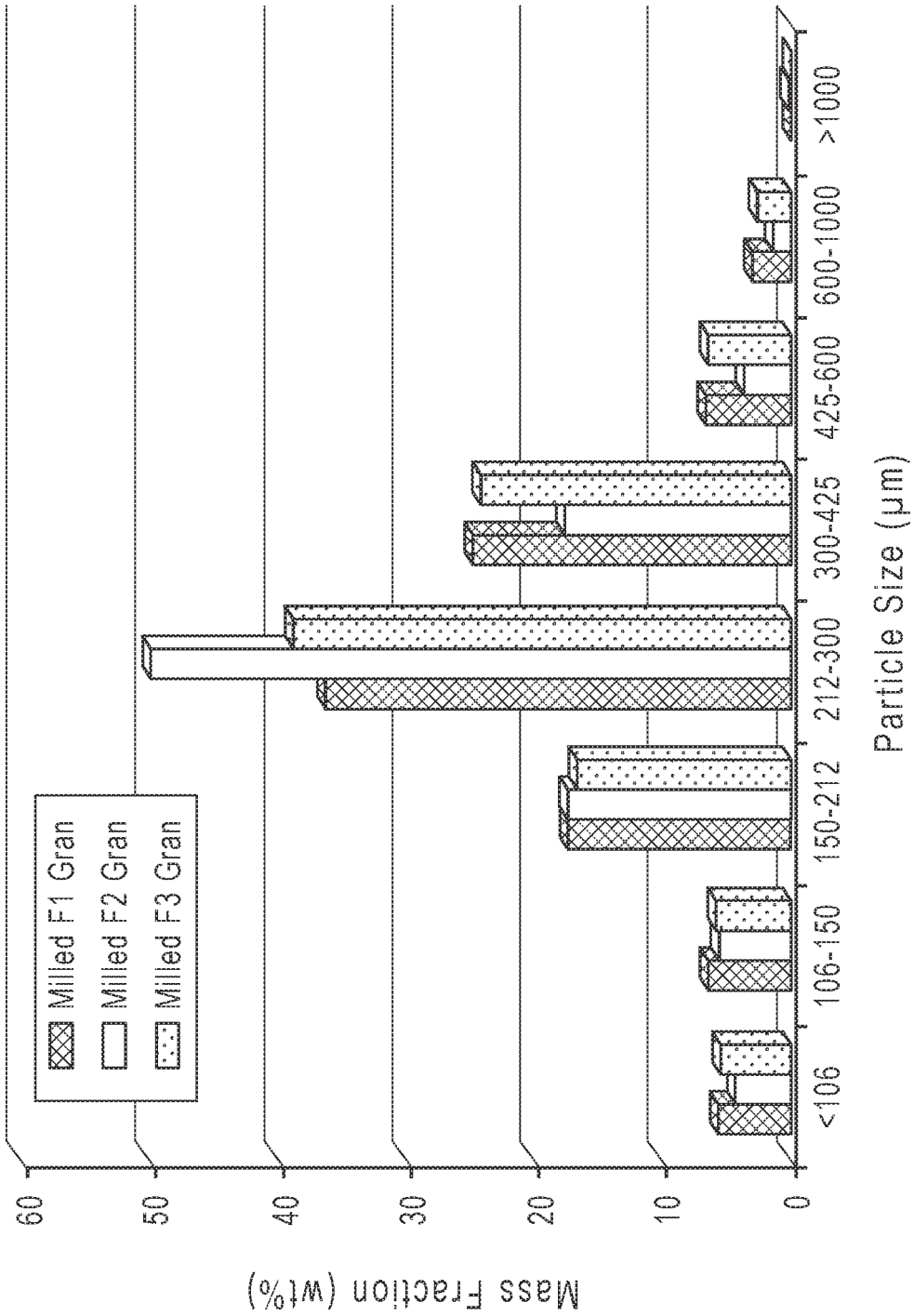


Figure 11: Radiation Induced Nutrient Degradation in Layered Granulations

