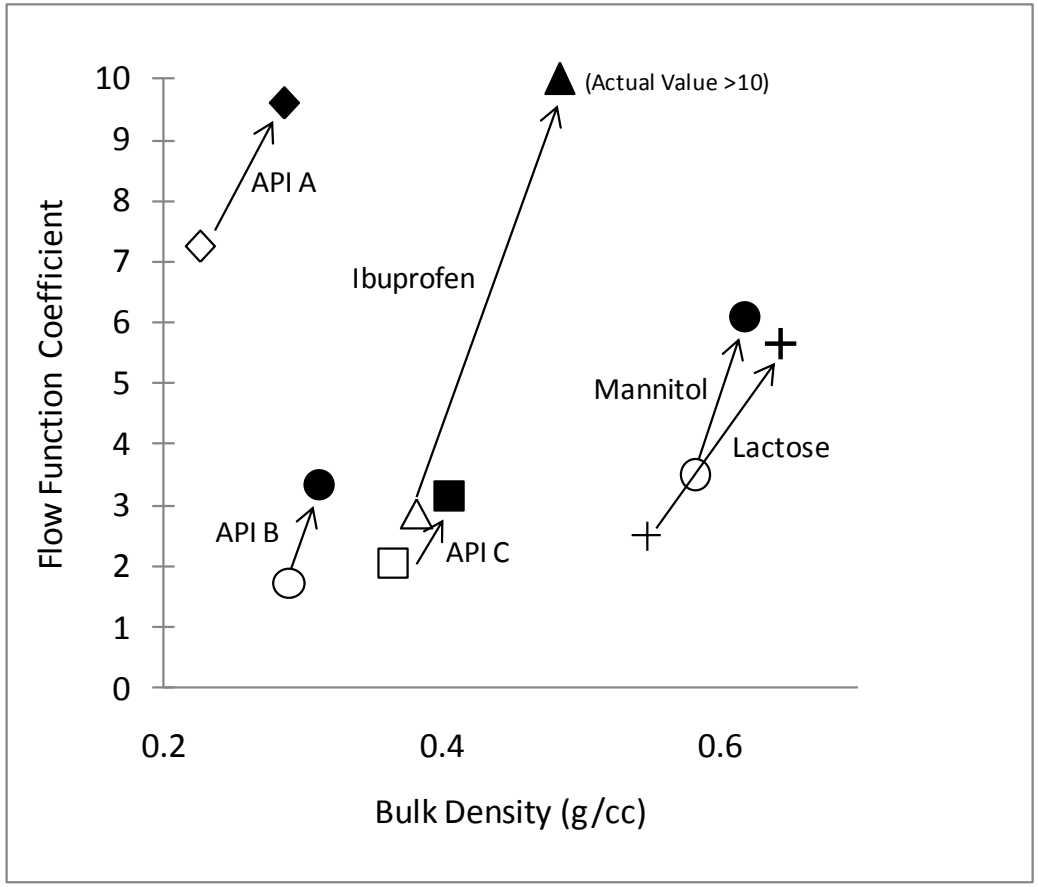
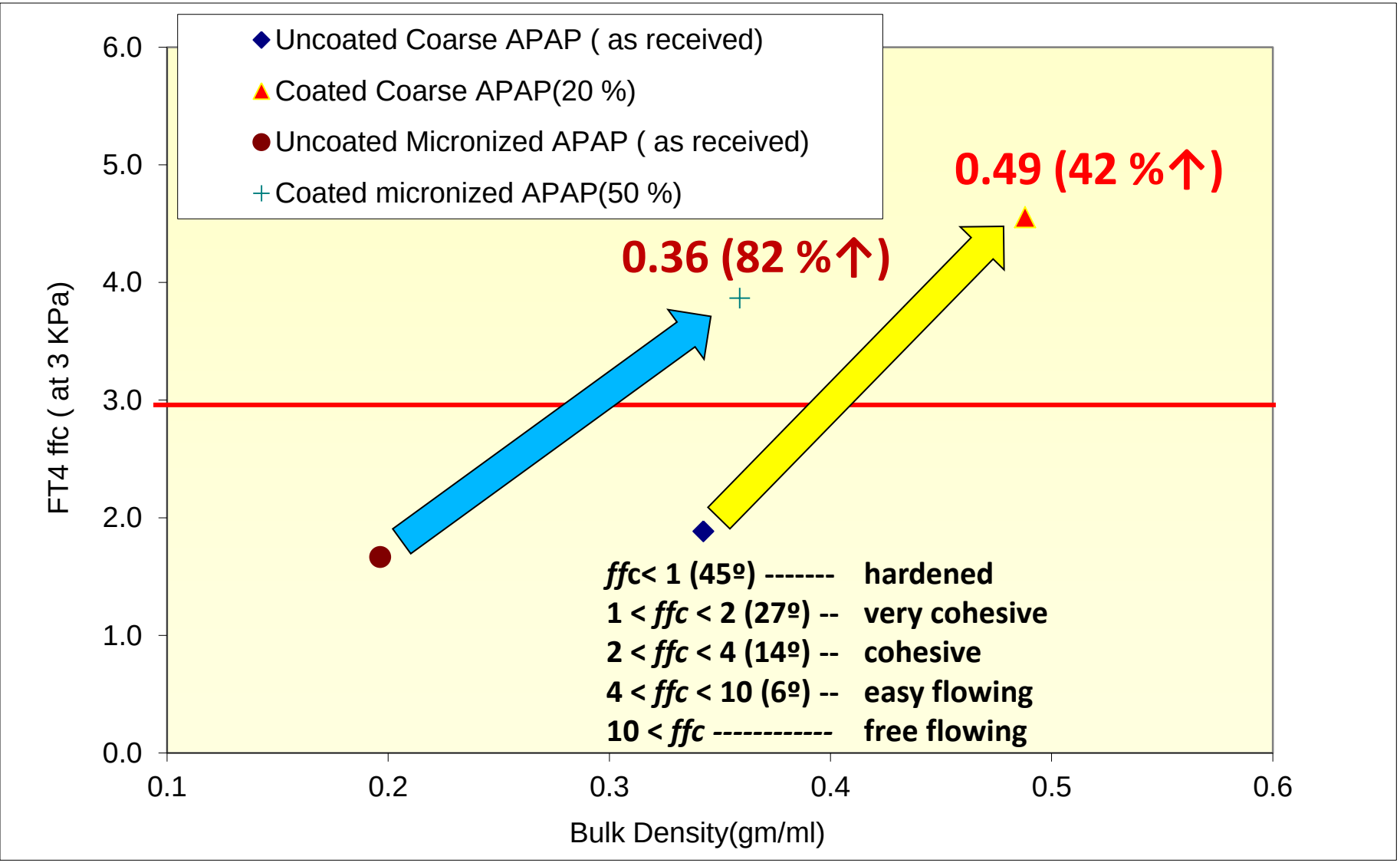
Bulk Density as a Phase Map

- Nanocoating the guest particles had a positive effect on both powder flow (increase in FFC) and bulk density (increase in bulk density).

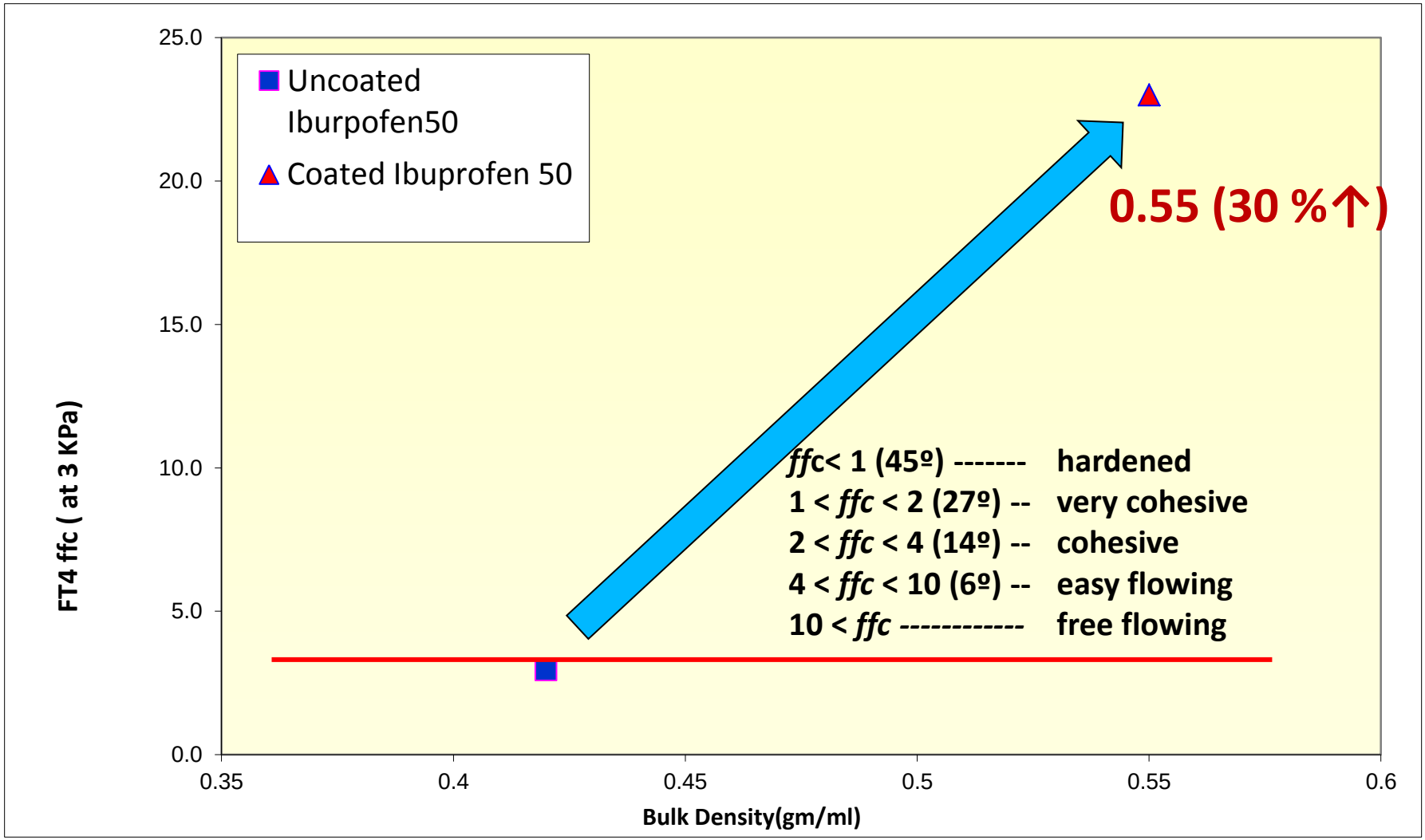


- % Increases in bulk density ranged from 10%-27% improvement when using dry coating
- Bulk density appears to be a rapid and useful surrogate for assessing changes in powder flow performance.

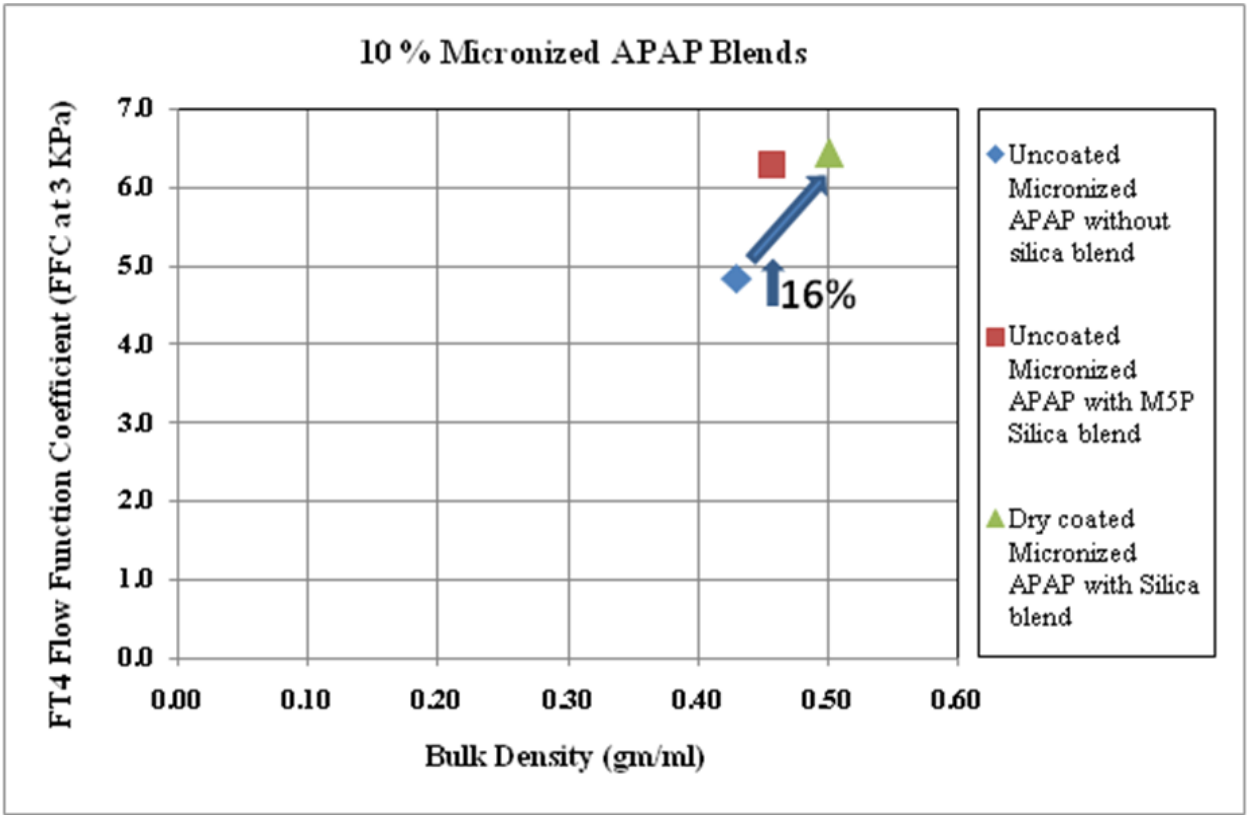
FFC versus Bulk Density of APAP (before and after dry coating in the MAIC)



FFC versus Bulk Density of Ibuprofen 50 (before and after dry coating in the continuous device)



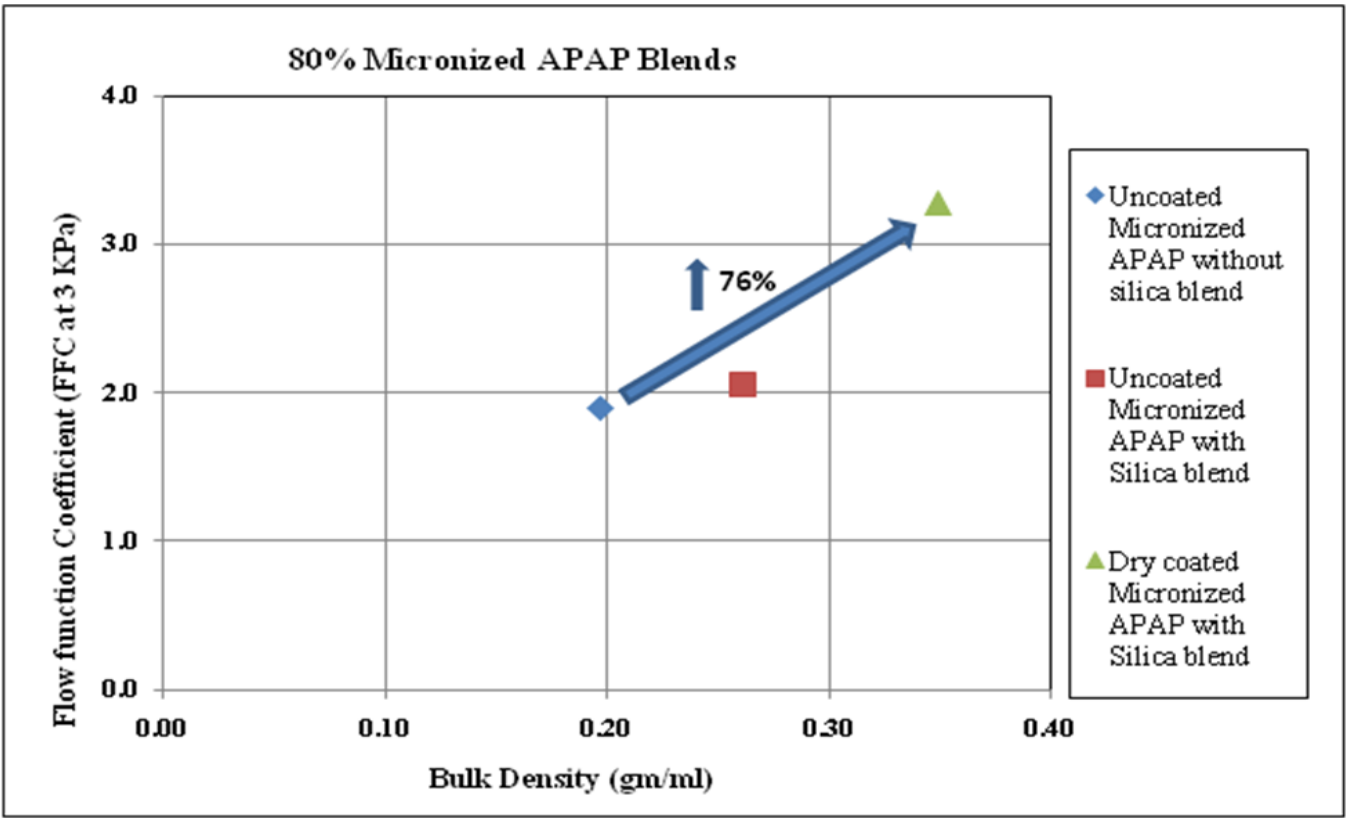
Low (10 % API) Drug Loading Blends of MAIC Coated Powders (Results courtesy of Lakxmi Gurumurthy)



- Excipients have a dominant behavior on the flow properties
- Increase in bulk density of the dry coated blends with respect to the uncoated API blend was 16 %

- Increase in the bulk density and the FFC values of the dry coated blends indicates that the dry coating of the API has a positive effect on the blend properties even at the low drug loadings.

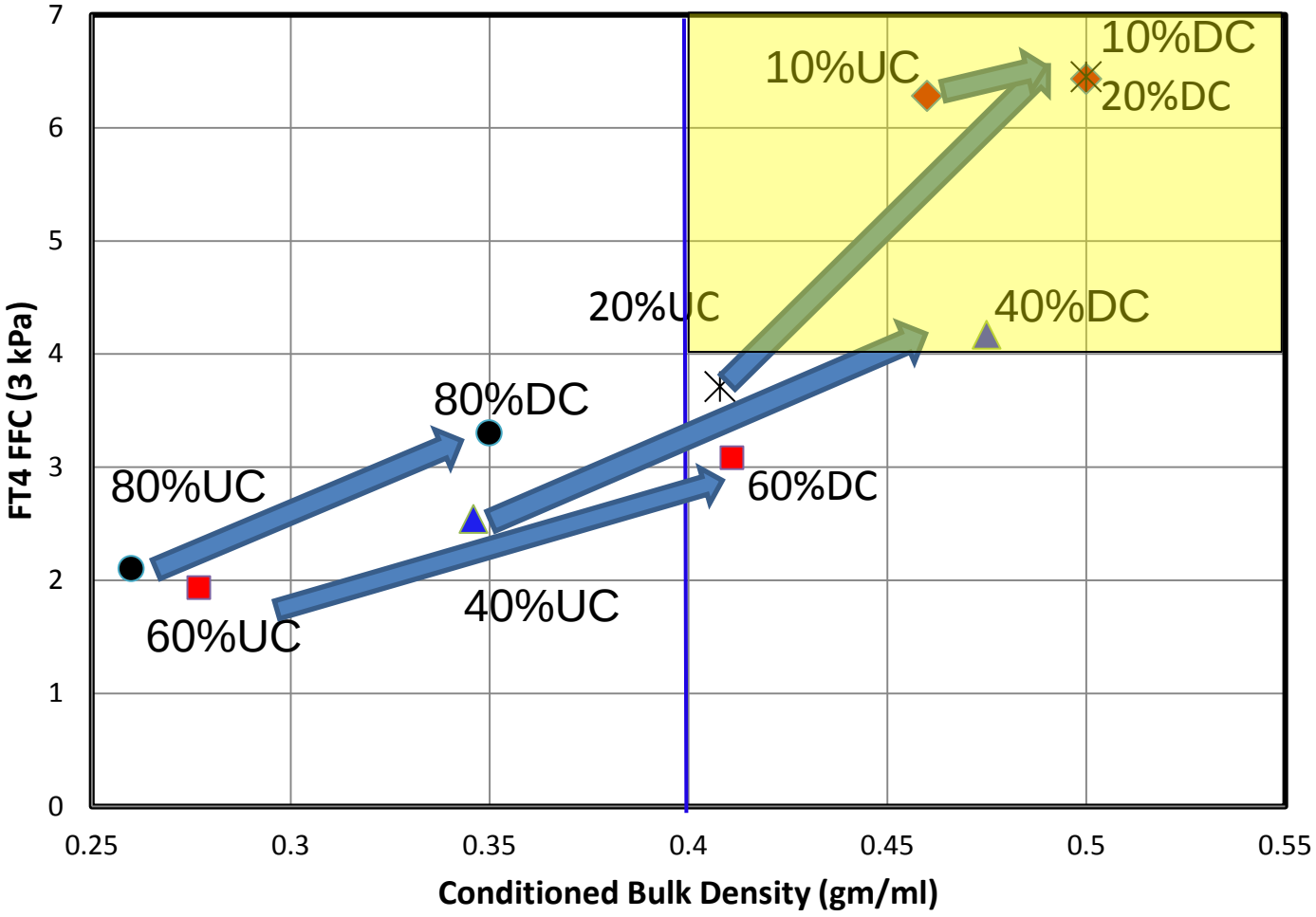
High (80 % API) Drug Loading Blends of MAIC Coated Powders (Results courtesy of Lakxmi Gurumurthy)



- Flow behavior is dominated by the API properties (Micronized APAP in this case)

- The dry coated blend had a significantly higher FFC and bulk density values
- The increase in the bulk density was 76% wrt the uncoated API blends

Phase Map : Bulk Density vs. FFC



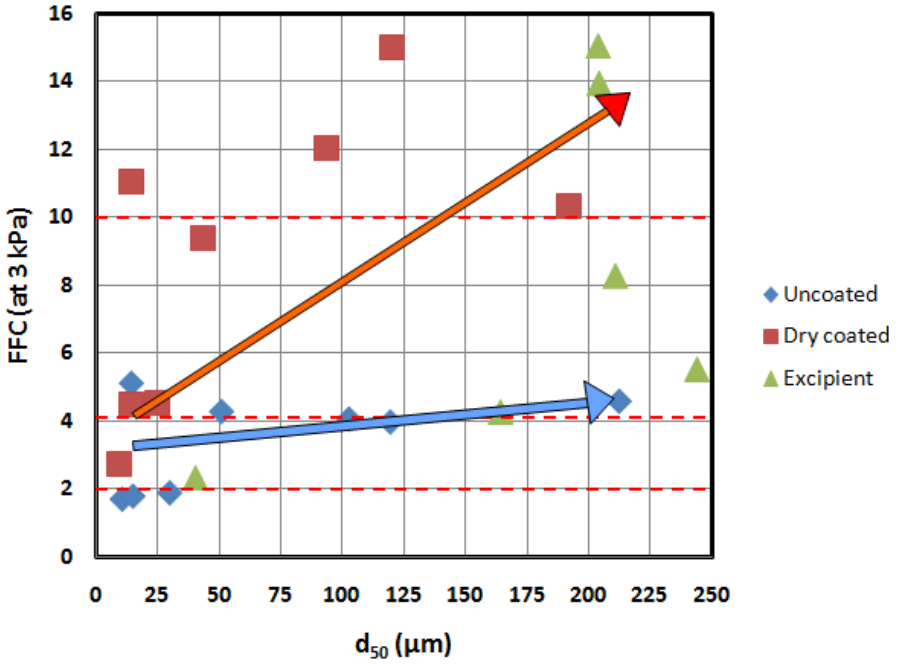
UC- uncoated
DC- dry-coated

- 10% API loading
- 20% API loading
- 40% API loading
- 60% API loading
- 80% API loading

- All blends with dry coated API have improved BD and FFC
- Density improvement suggests that up to 60% API blends may be a candidates for Direct Compaction

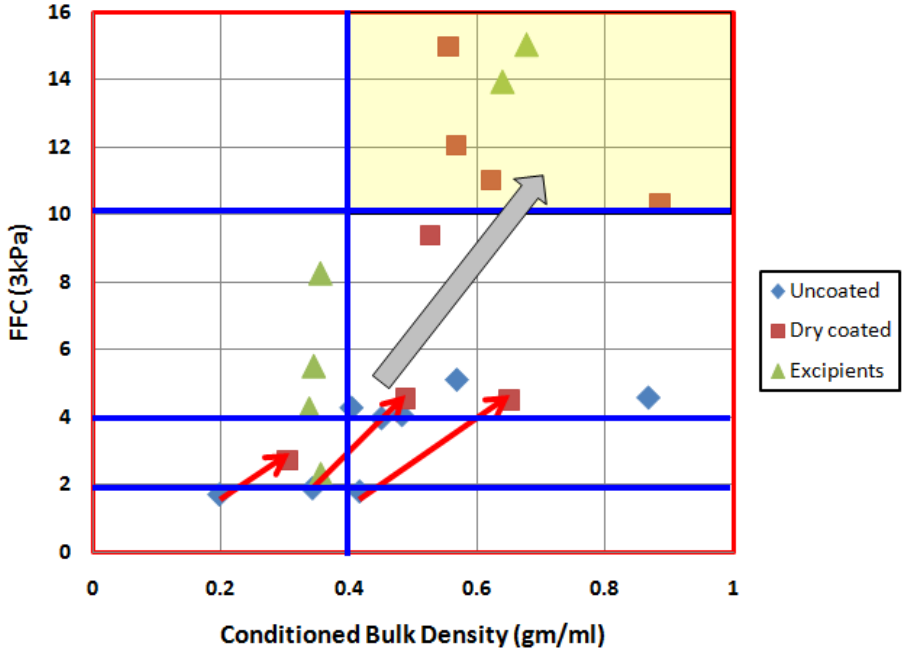
Phase Map: Particle Size vs. FFC and Bulk Density vs. FFC

Particle Size vs. FFC



All uncoated powders having lower FFC. Dry coating helps to increase the FFC. Average slope of FFC vs. d_{50} is more stiff for of dry coated powder, showing its superior flow properties over uncoated powder.

FFC vs. Bulk Density



Dry coating increase the FFC and Bulk density both. Many cases, dry coated powders are free flowing