

**Amgen Seminar Series in Chemical Engineering**  
in  
Cherry Auditorium, Kirk Hall, 1 PM

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**Hot Melt Extrusion – a Novel Method for Drug Manufacturing**

By

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One of the biggest challenges in today's pharmaceutical industry is that as many as 50% of newly developed drug candidates are poorly soluble in water, which results in poor bioavailability. One strategy to address the challenge is to prepare so-called solid solution/dispersion through Hot Melt Extrusion (HME) process. HME involves mixing a drug and a polymeric excipient at an elevated temperature in processing equipments with one or more rotating screws. The drug molecules will partially or fully dissolve into the water-soluble polymer during processing. The thus prepared drug tablets can have a significantly higher dissolution rate and higher apparent solubility in body fluids, compared to either pure drug powders or the same polymer-drug mixture prepared by the traditional process. This unique advantage combined with other benefits explains why HME caught a great deal of interest in recent years.

The presentation includes three parts. In the first part, a brief introduction to extrusion process and research motivation will be given. Some recent data on polymer-drug thermodynamics, especially the drug's solubility in polymers, will be given in the second part. The last part of the presentation focuses on understanding of HME process.

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