

Supporting information for the manuscript entitled

Dissolution Mechanisms of Amorphous Solid Dispersions: A Close Look at the Dissolution Interface

Alexandru Deac,¹ Qingqing Qi,¹ Anura S. Indulkar,² Yi Gao,² Geoff G. Z. Zhang,² and Lynne S. Taylor¹

1. Department of Industrial and Physical Pharmacy, College of Pharmacy, Purdue University, West Lafayette, Indiana 47907, United States

2. Development Sciences, Research and Development, AbbVie Inc., North Chicago, Illinois 60064, United States

Correspondence: Geoff G. Z. Zhang (Telephone: +1-847-937-4702; Fax: +1-847-937-7756) and Lynne S. Taylor (Telephone: +1-765-496-6614; Fax: +1-765-494-6545).

E-mail addresses: Geoff.GZ.Zhang@abbvie.com (G.G.Z. Zhang), lstaylor@purdue.edu (L.S. Taylor)

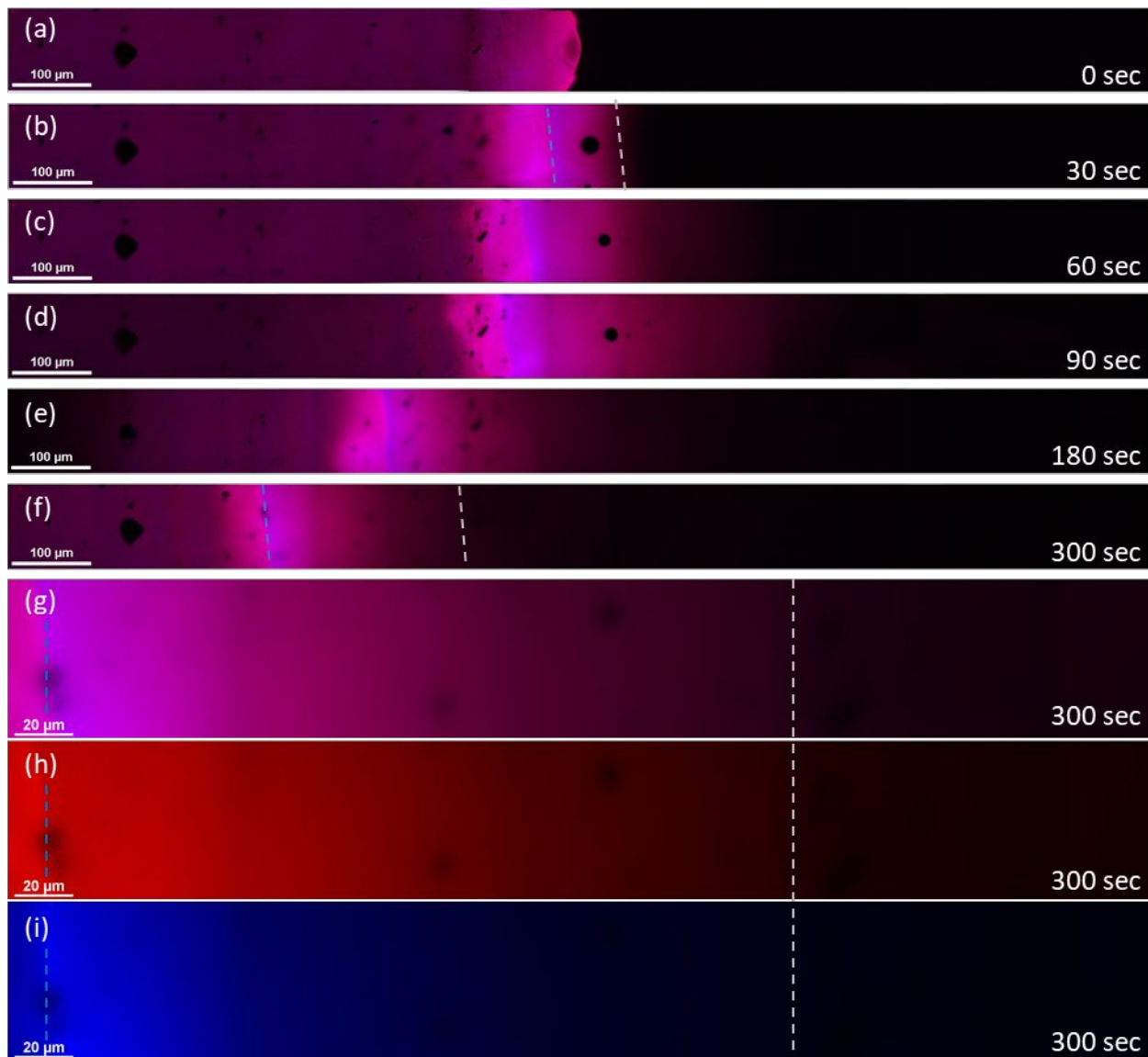


Figure 1. *In situ* confocal micrographs of the PVPVA/solution boundary for a PVPVA compact containing red (hydrophilic) and blue (hydrophobic) fluorescent dyes, where (a) through (f) show the evolution of the interface over time with the blue and red filters overlapping. Micrographs (g) through (i) illustrate a magnified view of the interface after 300 seconds of dissolution, where (g) shows both filters, (h) shows only the red filter, and (i) shows only the blue filter. The dotted lines represent the glass/gel (---) and gel/solution (▬) interfaces.

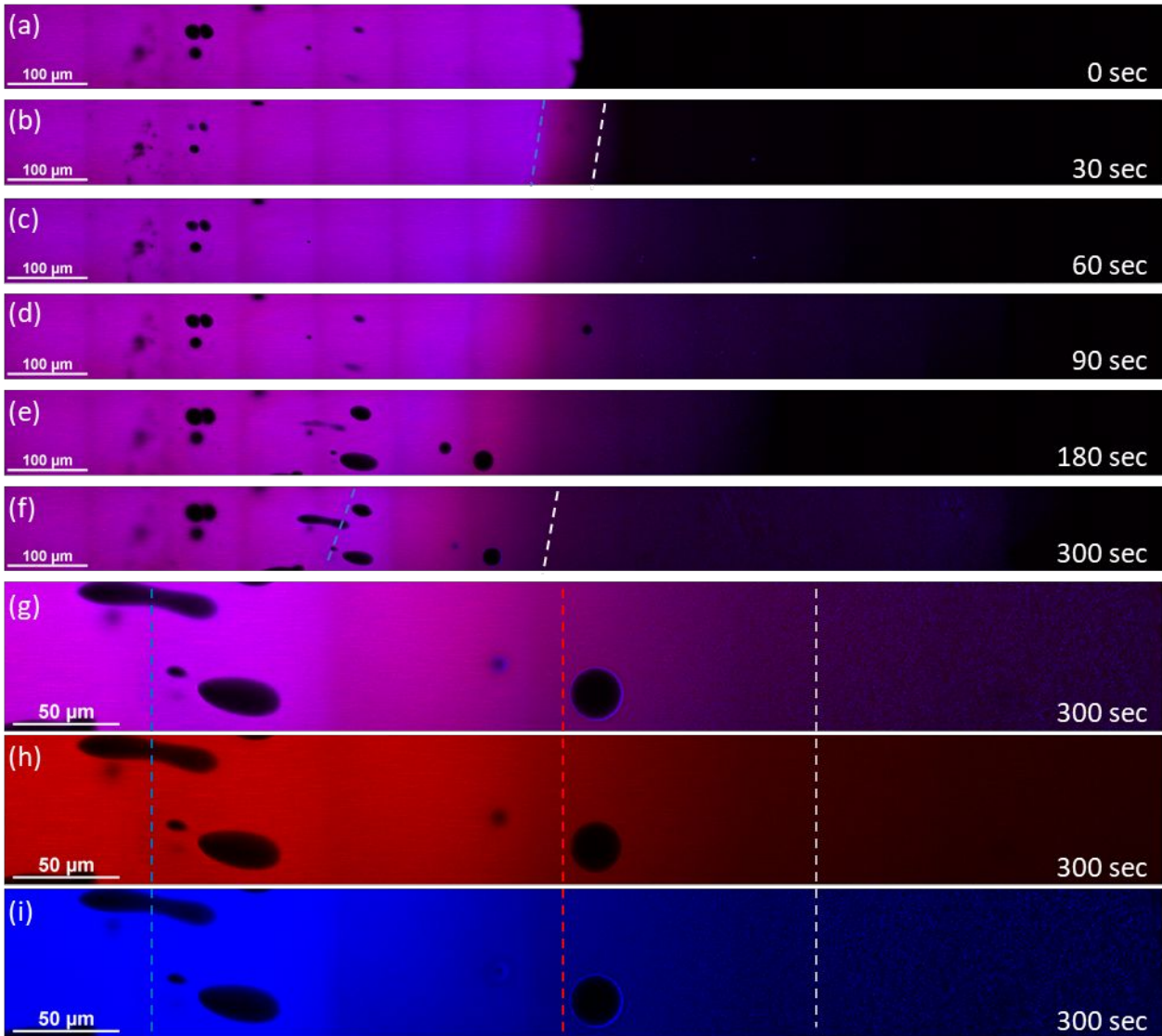


Figure 2. *In situ* confocal micrographs of the ASD/solution boundary for a 5% DL MePPH-PVPVA ASD compact containing red (hydrophilic) and blue (hydrophobic) fluorescent dyes, where (a) through (f) show the evolution of the interface over time with the blue and red filters overlapping. Micrographs (g) through (i) illustrate a magnified view of the interface after 300 seconds of dissolution, where (g) shows both filters, (h) shows only the red filter, and (i) shows only the blue filter. The dotted lines represent the glass/gel (---), gel/solution (---), and phase separation (---) interfaces.

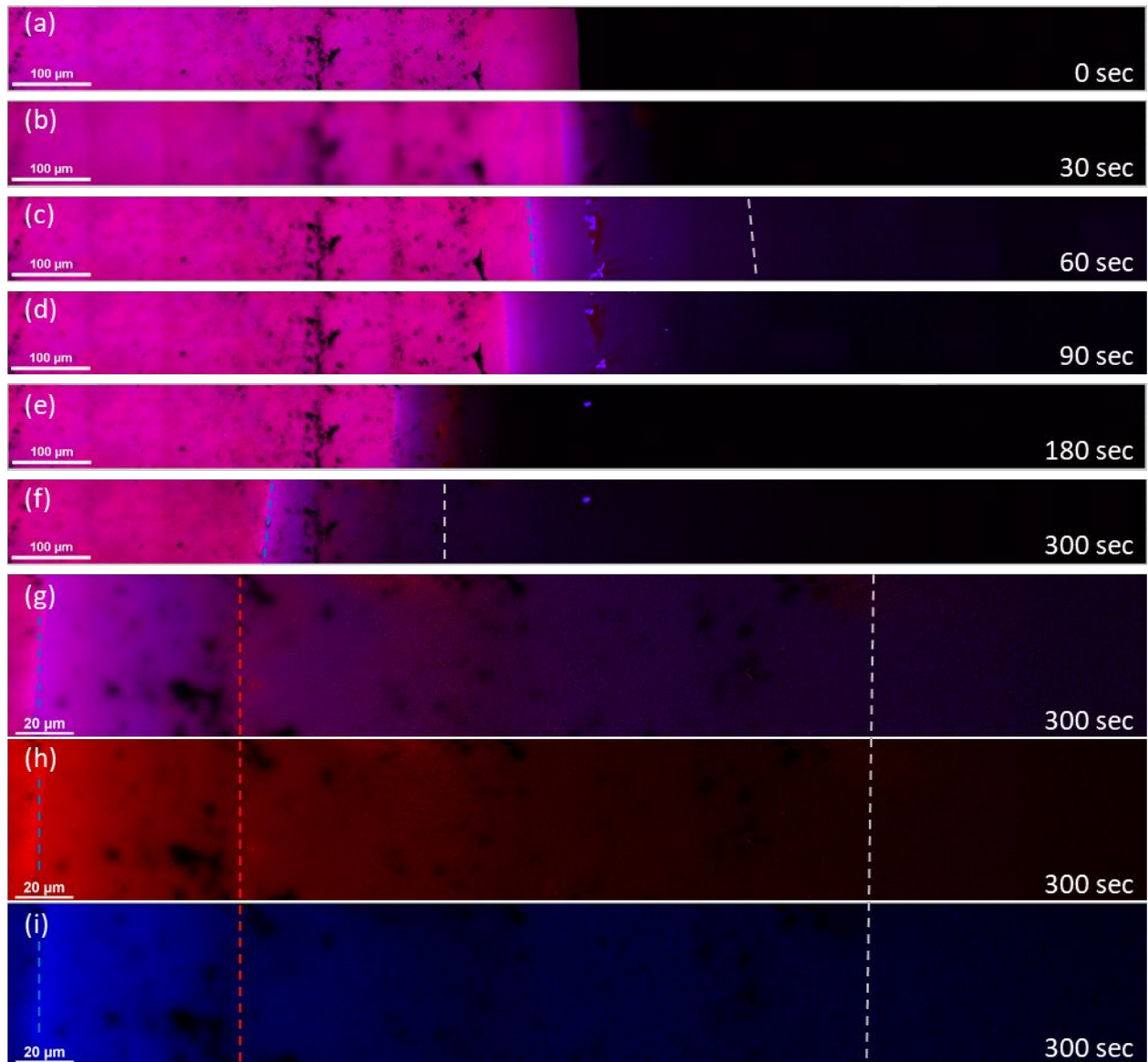


Figure 3. *In situ* confocal micrographs of the ASD/solution boundary for a 20% DL MePPH-PVPVA ASD compact containing red (hydrophilic) and blue (hydrophobic) fluorescent dyes, where (a) through (f) show the evolution of the interface over time with the blue and red filters overlapping. Micrographs (g) through (i) illustrate a magnified view of the interface after 300 seconds of dissolution, where (g) shows both filters, (h) shows only the red filter, and (i) shows only the blue filter. The dotted lines represent the glass/gel (---), gel/solution (---), and phase separation (---) interfaces.

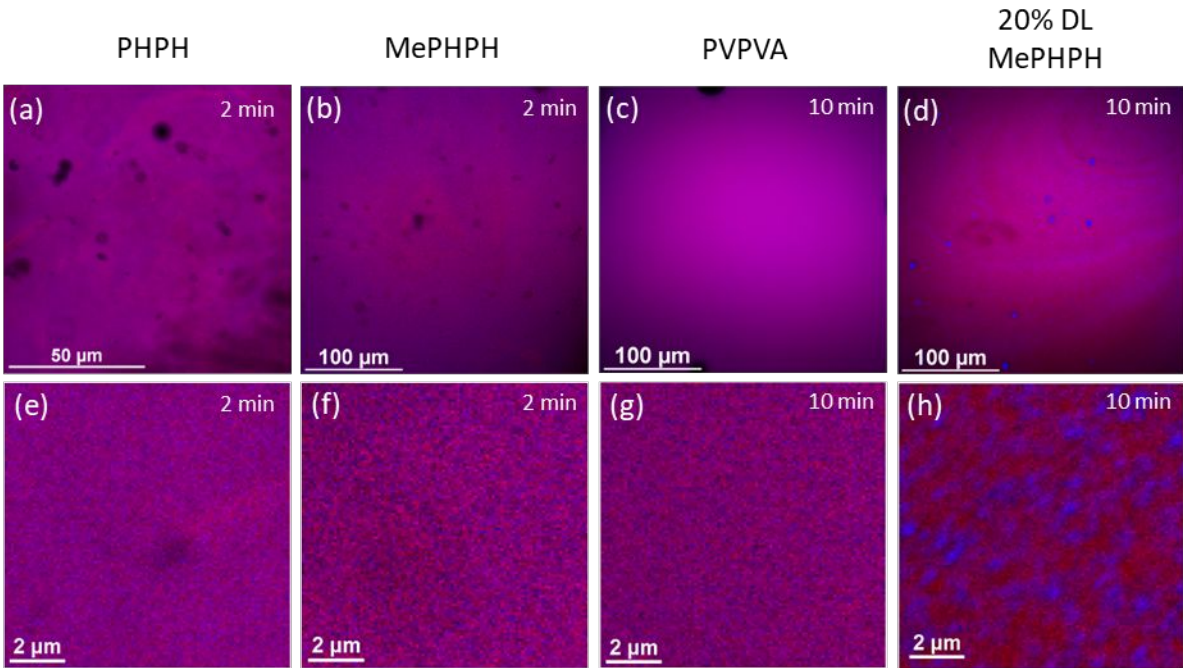


Figure 4. Confocal images of compact surface for control samples, where PHPH, MePHPH, and PVPVA are homogeneous and 20% DL MePHPH is phase separated. Blue and red dyes are prodan (hydrophobic) and rhodamine 6G (hydrophilic), respectively.