Measurement of Solvent-Mediated Polymorphic Transformation of API by Raman Spectroscopy

Nguyen Le Tri Dang, 김광주*
한밭대학교
(kjkim@hanbat.ac.kr*)

Due to the difference in internal structure of solid state, polymorphs exhibit alternative features such as physical, chemical and biological properties. Some of these properties including biopharmaceutical properties affect strongly on the usage of polymorphs. Particularly, metastable forms is often desired because of their enhanced solubilities and faster dissolution rates although metastable forms can transform into the most stable form throughout solvent-mediated transformation.

In this research, real-time Raman spectroscopy was manipulated to characterize the crystallization and solvent-mediated transformation of an API. At first, metastable polymorph occured in cooling crystallization of aqueous solution as a result of the principles of Ostwald stage rule [1]. Thereafter, in the presence of solvent, metastable polymorph transformed into stable polymorph which can be observed by several characteristic peaks of two polymorphs.