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### Relaxation dynamics of amorphous pharmaceuticals

**Sailaja Urpayil**

MES Keveeyam College, India

Amorphous state is very important in the pharmaceutical point of view. This state is having high free energy, dissolution rate and solubility compared to their crystalline counterpart. High solubility leads to the increased rate of bioavailability. This can lead to the improved therapeutic activity of the amorphous pharmaceuticals. Even though it is economical the production of amorphous pharmaceuticals is limited because the amorphous state is highly unstable one. Thermal studies by differential scanning calorimetric (DSC) showed that ketoprofen and fenofibrate are very good glass formers. Based on the DSC result we have explored the molecular dynamics of amorphous pharmaceuticals like ketoprofen, fenofibrate and cimetidine by broadband dielectric spectroscopy (BDS) which is an investigative tool to probe the molecular dynamics of amorphous pharmaceuticals. We have observed that different relaxations are present in the amorphous or glassy state. These relaxations are responsible for the instability of the amorphous drugs. Out of the different relaxations, secondary relaxation originating from the intermolecular motion (JG-relaxation) is argued to be universal.

### Biography

Sailaja Urpayil, MSc, MPhil, PhD is working as an Associate Professor, Department of Physics, MES Keveeyam College, Valanchery, Kerala, India. Her area of specialization is in Pharmaceuticals. She has won Dayawati Rastogi Award for best paper presentation in the 4<sup>th</sup> International Conference on Perspectives in Vibrational Spectroscopy (ICOPVS\_2013) on 6-9 August 2013. She has published various articles in various journals like *Eur. J Pharm. Sci* 49 (2013), *IOSR Journal of Pharmacy* 2(2012), *IOSR Journal of Pharmacy* 6(2012), *Journal of Pharmaceutical Analysis* (DOI <http://dx.doi.org/10.1016/j.jpha.2014.09.003>), *Translational Medicine*.

[sailajaurpayil@gmail.com](mailto:sailajaurpayil@gmail.com)

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