

Control of amplitude and phase of ultra-broadband laser and CARS imaging

The ultimate goal of this project is to teach our laser how to detect and even cure cancers and other diseases. Many diseases such as cancer were associated to some chemical (for example, proteins) changes in the cell. By detecting those chemicals, we can diagnose the related diseases and image the abnormal cells or tissues. By changing some characteristics of the laser, we can teach laser how to distinguish target chemicals or proteins from others so that the laser can image the tissues and tell us which cells are not healthy. Furthermore, we can tell the laser to react with some chemical in the unhealthy cells and kill them with other cells intact. The characteristics we change are the amplitude and phase of the laser.

-Bingwei Xu