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Laser Induced Breakdown Spectroscopy of Glass and Crystal Samples PRAKASH SHARMA, ALEJANDRA SANDOVAL, MICHAEL CARTER, AKSHAYA KUMAR, Department of Physics, Tuskegee University, Tuskegee, Alabama — Different types of quartz crystals and rare earth ions doped glasses have been identified using the laser induced breakdown spectroscopy (LIBS) technique. LIBS is a real time technique, can be used to identify samples in solid, liquid and gas phases. The advantage of LIBS technique is that no sample preparation is required and laser causes extremely minimal damage to the sample surface. The LIBS spectrum of silicate glasses, prepared by sol-gel method and doped with different concentration of rare earth ions, has been recorded. The limit of detection of rare earth ions in glass samples has been calculated. Total 10 spectrums of each sample were recorded and then averaged to get a final spectrum. The ocean optics LIBS2500 plus spectrometer along with a Q- switched Nd: YAG laser (Quantel, Big Sky) were used to record the LIBS spectrum. This spectrometer can analyze the sample in the spectral range of 200 nm to 980 nm. The spectrum was processed by OOILIBS-plus (v1.0) software. This study has application in the industry where different crystals can be easily identified before they go for shaping and polishing. Also, concentration of rare earth ions in glass can be monitored in real time for quality control.

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