European XFEL Science Seminar

**Tuesday, 4th April 2017, 17:00 (Tea/Coffee at 16:45)**
Campus Schenefeld, main building (XHQ) room E1.173

# Cindy Bolme

Shock and Detonation Physics, Los Alamos National Laboratory

## X-ray free electron laser studies of deformation and phase transitions in shock-compressed materials

The brilliance of hard x-ray free electron laser sources is enabling a new era of dynamic compression materials science through in situ x-ray diffraction of shock-compressed materials. Using the Matter in Extreme Conditions instrument at the Linac Coherent Light Source, we have studied laser shock-driven deformation processes and phase transitions in silica (SiO2), titanium, and cerium. During these studies, we have observed several types of dynamic materials phenomena, including crystallization of silica during shock compression, deformation twinning and phase transformation in titanium, and resolidification of shock-melted cerium. Results from these experiments will be presented.

**Host: Karen Appel**