

# *In situ studies of nanoparticle growth in a glass matrix*

- ❑ ZBLAN glass ceramics are being developed for use as X-ray scintillators and storage phosphors
- ❑ The optical properties depend critically on the size and distribution of the  $\text{BaCl}_2$  nanocrystals that form on heating
- ❑ TEM is being used to study the microstructure of the glasses and also the way in which crystallization occurs.

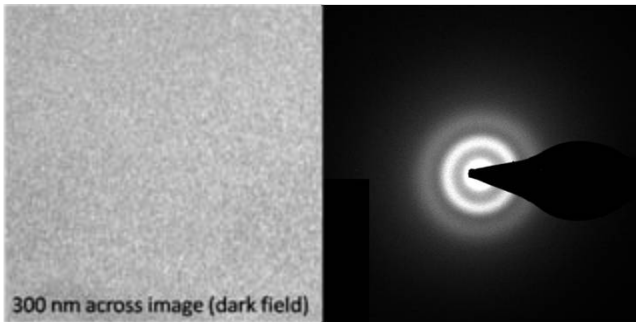


Figure 1: Low magnification dark field TEM image of ZBLAN (left) and selected area diffraction pattern (right).

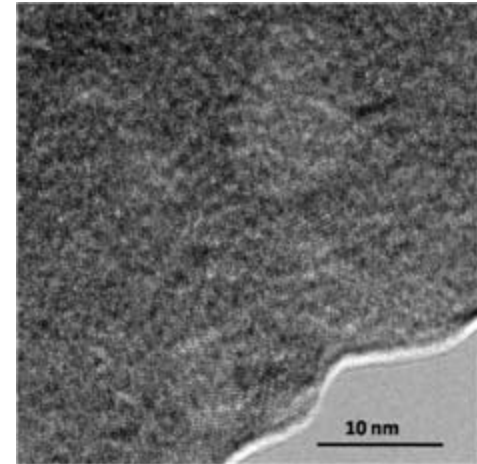


Figure 2: Bright field TEM image of partially-crystallized ZBLAN.

Future work:

- ❑ *In situ* heating of glass ceramics to observe interface kinetics with the glass matrix.
- ❑ The *in situ* results will be compared with samples that have been heat treated *ex situ*.