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 $BaCl_2$ nanocrystals that form on heating
- TEM is being used to study the microstructure of the glasses and also the way in which crystallization occurs.

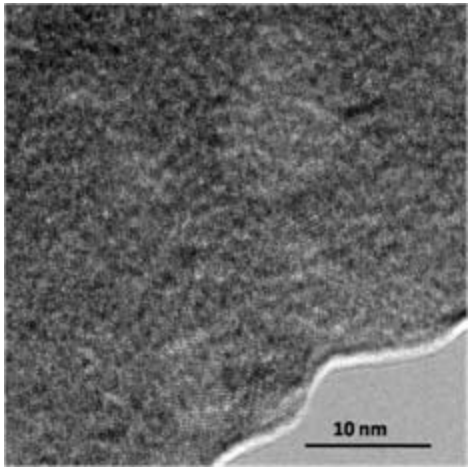

Figure 2: Bright field TEM image of partially-crystallized ZBLAN.

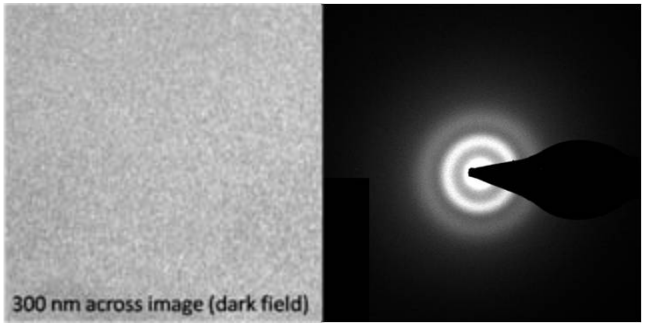

Figure 1: Low magnification dark field TEM image of ZBLAN (left) and selected area diffraction pattern (right).

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.*

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