Introduction: The cluster CI 1257+4738 was found by comparing a ROSAT image with red ground based images to pick out red galaxies from foreground bluer ones. Our study adds another cluster to the handful of clusters with $z \geq 0.9$. Each cluster provides new insights as to the relationship between the evolution of galaxies and the ICM. We acquired Chandra, XMM-Newton, Spitzer IRAC plus MIPS24 data to study this relationship between galaxies and the ICM. In this work we concentrate on using the Spitzer data to make a measure of star formation rates (SFRs) and specific star formation rates (SSFRs) as function of distance from the cluster center. The deep Spitzer observations of 2,000 seconds in IRAC1-4 plus MIPS24, plus Gemini spectra enabled us to cover a range of SFRs and SSFRs of ~100 for spectroscopically confirmed cluster members.

The cluster is dynamically young based on the X-ray emission contours and the position of dark matter filaments. Although the SFR in the cluster members increases with increasing projected distance, the SSFR tends to increase with increasing cluster centric distance, but the SSFR shows no clear trend. Perhaps the total stellar mass is reduced (via ram pressure stripping or galaxy-galaxy interactions) such that the SFR will be higher in lower density regions versus the SSFR, which depends on the total galaxy stellar mass as well as the SFR. Many of the higher SFR galaxies have line of sight velocities of 1,000 km s$^{-1}$ and above that is classified as a LRG. We suggest that the cluster is so young that galaxies are just infalling along several different cold dark matter filaments whose crossings form the cluster center.

Discussion:
- CI157+47 at $z = 0.866$ is one of the highest redshift clusters with a richness of multi-wavelength data spanning the X-ray to the mid IR.
- The cluster is dynamically young based on the X-ray emission contours and the position of dark matter filaments. Although the SFR in the cluster members increases with increasing projected distance, the SSFR approximately constant as a function of distance. Thus, it is likely that the cluster is a newly (less that one galaxy crossing time of ~1 Gyr) formed mass concentration located at the crossing of dark matter filaments. Therefore models of hierarchical CDM large scale structure formation should accommodate cluster formation as late as about ~9 Gyr ago with massive ($\geq 10^{14} M_{\odot}$) galaxies that are red but not dead.

This work was supported in part by NASA grants GO7-8144X//NAS8-03060 (Chandra), NNX07AF01G (XMM-Newton), and NMO710076 (Spitzer). MPU thanks LAM for hospitality during a portion of his work on this project. F.D. and G.B.L.N. acknowledge financial support from the CAPES/COFECUB. MPU thanks R. Chary for useful comments and code regarding SFRs and SSFRs, but any errors herein are the sole responsibility of MPU.