Hierarchical Self Assembly of Actin Bundle Networks LINDA HIRST, CYRUS SAFINYA, Materials and Physics Depts. Biomolecular Science and Engineering Program, UCSB. — The network-like structure of actin bundles formed with the cross-linking protein α-actinin has been investigated on different length scales via small angle x-ray scattering and confocal fluorescence microscopy. We describe the hierarchical structure of aggregates formed at different ratios of cross-linker using both α-actinin and also the non-specific polyelectrolyte, polylysine. The effects of different lengths of F-actin are also discussed. An interesting feature of this system is the formation of a dense layer on the surface of the actin gel. This layer exhibits interesting morphologies and can be formed to have a defined shape. Biologically based structures such as this have the potential to generate interesting biological scaffolds for applications in cell encapsulation and tissue engineering.

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