Florida Agricultural and Mechanical University (FAMU) and the National Science Foundation (NSF)-sponsored Mesoscale Interface Mapping Project (MIMP) in the Materials Science and Engineering (MSE) Department at Carnegie Mellon University (CMU) propose the formation of a long-term teaching and research collaboration. The faculties at both institutions intend to integrate research and education in a manner that will appeal to minority students, thereby resulting in an increase of minority graduates in science and engineering. This proposed collaboration will strengthen the quality of the materials science curriculum at FAMU and provide more opportunities for minority students to participate in materials science research at FAMU and CMU. It also enhances the materials science research resources at both FAMU and CMU through long-term collaboration, shared equipment, and shared software. This collaborative work is based on a history of interactions between the faculty of the two universities in research and education. The research collaboration has already resulted in 5 publications. Another outcome of this collaboration will be an increase in the number of minority students who will pursue graduate degrees in materials science and engineering. The interaction will significantly diversify CMU’s program. Lastly, this project will establish a long-term education and research collaboration between FAMU and CMU.

The proposed collaborative will employ a multi-media component which will provide regular contact between the faculty at CMU and FAMU. We have already created one course titled “Texture in Polycrystalline Materials” using our multi-media system. This funding will provide the means to create two courses with a higher number of ISDN lines and hardware for better interactive, long-distance learning between CMU and FAMU. A materials laboratory course for undergraduates will be created through CMU. Five research collaborative teams will be created as part of this proposal with the goal of initiating and utilizing minority undergraduate students in research.

In the final year of the program a total of 20 undergraduate students will be involved in research projects working with the professors at FAMU and CMU benefiting from ISDN lines for live interactions during the academic year. Majority of these students will spend the summer at CMU to continue their research activity under the supervision of their CMU professor.

After the termination of the NSF funding, the distance learning courses and the research collaborations will be sustained through the outreach program of the MIMP. The curricular expansion at FAMU will be sustained as part of the educational mission of the Mechanical Engineering Department. FAMU will continue its support of the collaboration at 60% of the funding for student and laboratory activities and the multi media system for more than three years after the termination of NSF funding.