日本実験力学会 分科会（多分野交流分科会、衝撃工学分科会共催）のお知らせ

米国 Ohio State University (Columbus, OH) 機械/宇宙航空工学科の Prof. Noriko Katsube の日本への一時帰国の機会に、最近の研究の取り組みや米国での研究生活についてお話しして頂く機会を得ました。先生は University of California Berkley で Ph. D. を取得後、今日まで Ohio State University に勤務されています。主な研究対象は、複合材やセラミックスなどの先進材料の機械的挙動の数値シミュレーションからバイオメカニックスや生体材料への破壊力学の応用などの幅広い分野です。今回の講演概要を以下に記載しています。年末の慌ただしい時期ではありますが、ご参加を頂ければ幸いです。なお、参加を希望される方は、お手数ですが以下の世話人までご連絡を頂きますようお願いします。

日 時： ２０１３年１２月２３日（月） 13：30～16：30

場 所： 千葉科学大学大学院サテライト教室（加計学園東京事務所） Tel. 03-6273-4127

（〒100-8051 東京都千代田区一ツ橋 1-1-1 パレスサイドビル 毎日新聞社本社ビル１階）

注意）アクセス 地下鉄東西線 「竹橋」 下車 九段下方面の地下通路からのみ入所可能

世話人： 多分野交流分科会 主査 森 きよみ kmori@ms.takushoku-u.ac.jp

衝撃工学分科会 主査 横山 隆 yokoyama@mech.ous.ac.jp

講演プログラム

1. Associate Prof. Kiyomi Mori (Takushoku University, Japan)

A study on elastic modulus of inorganic polymer composite filled with aluminum particles

Abstract： In the manufacturing processes such as a metal press or a die cast, it is not easy to repair and/or modify the molds because they are made of hard and heat resisting metals. In this study, we propose a new type of heat resisting paste of inorganic polymer-based composites for repairing the metal structures. The matrix of these composites is inorganic adhesives in which many pores are made during curing with water evaporation. Therefore, to improve the strength of such a porous brittle material, low- melting metal particles are mixed and cured. Thermal expansion coefficient of the composite was measured at temperatures from room temperature to 600 degrees Celsius. The elastic modulus and strength of the composite specimens are also evaluated by the compressive test and bending test.

2. Prof. Noriko Katsube (Ohio State University, USA)

Effective spring stiffness for a periodic array of interacting coplanar penny-shaped cracks at an interface between two dissimilar isotropic materials.

Abstract : An effective spring stiffness approximation is proposed for a hexagonal array of coplanar penny shaped cracks located at the interface between two dissimilar solids. The approximation is based on the factorization of the solution on the material dissimilarity factor, the crack interaction factor and the effective spring stiffness solution for non-interacting cracks in a homogeneous material. Such factorization is exact and was validated for 2D collinear cracks between two dissimilar solids. The crack interaction factor is obtained using a recently developed model for stress intensity factors for an array of coplanar penny shaped cracks in a homogeneous material; also the material dissimilarity function recently obtained for non-interacting penny shaped crack at the interface between two dissimilar materials is employed. The obtained solution is useful for an assessment by ultrasonic measurements of the interface stiffness in bonded structures for monitoring the interfacial micro-damage growth due to mechanical loading and environmental factors.