



University of Oxford
Professor Alexander M. Korsunsky
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Your references EDF R&D - MMC
Our references HT27-Co-2013-016
Con tact Mme Lucie Saintoyant
Phone 33 1 60 73 70 43
Subject EDF support of ISTRESS Project

Les Renardières,

Dear M. Korsunsky

Thank you for discussing with us the project proposal entitled "Pre-standardization of incremental FIB micro-milling for intrinsic stress evaluation at the sub-micronscales"; in short, ISTRESS.

As one of the largest energy companies in Europe, EDF appreciates and supports every effort aimed at the development of a framework for reliable, repeatable, systematic measurement of residual stresses at the micron scale. We are currently not able to commit the resources that the project of this magnitude requires. However, we will be pleased to be closely associated with the consortium, to supply specific samples and to make contributions to the data discussion and interpretation.

The characterization and control of intrinsic stresses in small material volumes is important to us in many areas of process development and optimization. More specifically, our interests concern:

1. Measurement of micro-scale residual stresses in nano-crystalline materials and highly deformed polycrystals:

Modern methods of residual stress evaluation with microscopic resolution make use of tightly focused electron and X-ray beams. However, since the measurement principle relies on crystalline diffraction, these methods may not be suited to nano-crystalline and materials deformed over 1%.

2. Measurement of residual stresses with depth resolution for oxide or deposited layer:

FIB-DIC is believed able, contrary to diffraction based techniques, to measure 3D distribution of residual stresses. This advantage will be particularly interesting to characterized residual stresses in oxide or deposited layer.

In addition to sample provision, we will contribute to ongoing discussions and continuous project progress reviews. We believe that this project result in improvements in quality, ultimately contributing to better competitiveness.

Please do not hesitate to contact me for further questions.

Faithfully Yours,

Philippe Ollar

Director, Materials and Mechanics of Components Department

Copy to : Eric MOLINIE, Olivier DUPOND, Ellen PAVAGEAU, Abderrahim AL MAZOUZI (EDF R&D/MMC), Didier LE REVEREND (EDF R&D)

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