

We are pleased to submit the manuscript entitled « *Development of a chewing simulator for testing dental materials: a pilot study* » to the British Journal of Applied Science & Technology.

The chewing simulator device presented in this work, unlike previous chewing simulators actually present, is based upon a new concept of the simultaneous and systematic presence of mechanical, chemical and thermal factors at the same time, and the interplay of these three factors on the wear and aging of the dental materials used in the oral cavity whether prosthetic or restorative, and more importantly on the vulnerable tooth –material interface, furthermore the device allows testing the action of thermal shock (abrupt changes in temperature in the oral cavity e.g. Hot coffee / frozen ice-cream) believed to have more pronounced effect on the interface than conventional thermo cycling methods used. (Fenner 1998)

Another important aspect of the current device is its ability to recover the liquid media used during the chewing cycles, and with the help of a special draining pump and a Charlie robot, collected media corresponding to specific time and after specific number of cycles, could then be analyzed for traces of eluted material (e.g. wear products from ceramic materials, Bisphenol A from resin material), all of which are considered toxic and pose health hazards to the human health. We would like to draw your attention to the fact that the French national agency of health products and drug security (***ANSM Agence Nationale de Sécurité du Médicament et des produits de santé***) is financing this ambitious project, as it would shed important light on the eluted substances in the oral cavity, resulting from the aging process, and their potential toxic effects. Moreover the device allows investigating the relation between the amounts of eluted material as related to the action of different factors mentioned above.

We would also like to draw your attention to the fact that at the same time the device is being developed, Another study, using part of the presented device, is being conducted to compare the effect of normal thermo cycling method with the effect of thermal shock on the restorative–tooth interface, the results will be evaluated using dye leakage, micro tensile bond testing, together with scanning electron microscope examination. Final results are due to be obtained by February 2015, in which case the priority for publishing the work will be for your journal, in order to complete the theme discussed in the current article.

Finally we would like to thank you for considering this work for publication in the British Journal of Applied Science & Technology.

Please find attached to this document two photos showing the experimental setup on part of the presented device and the electronic board connected to it.

