Chewing causes microwear

By DTI

CHENGDU, China/FAYETTEVILLE, USA: A team of researchers from the University of Arkansas in the US and the Tribology Research Institute at Southwest Jiaotong University in Chengdu has documented the effects of chewing on the nanosized structures that make up tooth enamel. Using tips made from different types of material, pressure was applied to the surface of human molars, which had been extracted for orthodontic purposes. The researchers scratched the teeth, moving the tip across the surface to simulate the action of teeth moving against each other during chewing. They also indented the tooth surface, pressing the tip against the enamel to simulate the pressure caused by crushing food.

The researchers observed that, at every level of pressure, scratching led to more damage than indentation, but both types of stress resulted in three different kinds of damage. Plucking occurred when the crystallites were separated from each other. Applying more pressure to the enamel led to deformation, or the bending and squeezing of the crystallites. At even higher levels of pressure, fragmentation resulted when the chemical bonds holding the crystallites together broke.

“Hydroxyapatite crystallites are the fundamental units of enamel, each less than 1/1,000th the thickness of a human hair,” said co-author Prof. Peter Unger from the University of Arkansas. “Most research on tooth wear to date has focused on effects at much larger scales, but we have to study enamel at this finer level to truly understand the nature of how the hardest tissue in our bodies resists wear and tear.” The study, titled “Enamel crystallite strength and wear: Nanoscale responses of teeth to chewing loads,” was published online on 25 October in the Journal of the Royal Society Interface.

Legal loopholes

Dentistry and cosmetic surgery are two fields that may be especially vulnerable to exploitation of legal loopholes concerning the administration of local anesthesia, according to the Australian and New Zealand College of Anesthetists. To address this issue, the medical body has called for tighter and uniform national regulation for administering sedation in these fields.

Changing taste

Caffeine is a powerful agonist of adenosine receptors, which promote relaxation and sleepiness. Depressing the effect of the receptors may make people feel more awake, but a new US study has found that it also decreases their ability to taste sweetness—which makes food and drink seem less sweet and may trigger sugar cravings, the researchers concluded.

Women in dentistry

SYDNEY, Australia: The latest figures out of Australia show that, for the first time in the island continent’s history, there are more women working in dentistry than men. According to data from the Dental Board of Australia, 30.2 per cent of dental practitioners, including dentists and dental therapists, across the country are female. Additionally, of the 732 current members of the Australian Dental Association Victorian Branch, 410 are women and 322 men.

With its flexible hours, creativity and good pay, many women are choosing the profession over medicine. Speaking to Dental Tribune, President of the Australian Dental Association Victorian Branch Dr Susan Wise said, “There is now more diversity of dentists with respect to gender and ethnicity. Women are attracted to dentistry as a career, as it is possible to do part-time work and fit in bringing up young children. This is more difficult in many fields of medicine, law, accounting and architecture.”