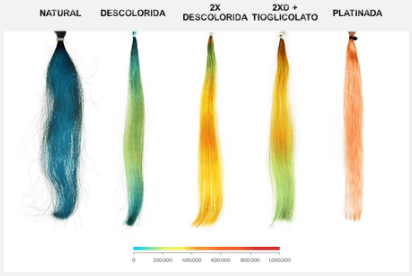
kosmo science

HAIR CARE

INNOVATIONS IN HAIR EVALUATION METHODS



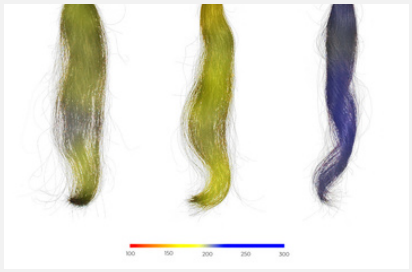
Damage Map

- Evaluation of surface damage
- Easy visualization of results
- Observation of damage along the hair fiber
- Exclusively developed damage scale



Hair Symphony

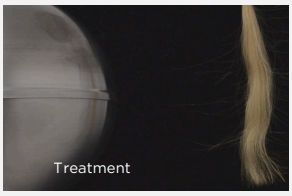
- Measurement of cuticle condition
- Transformation of roughness into frequencies that can be translated into sounds
- Detection of each product's unique sound signature



Hydration Map

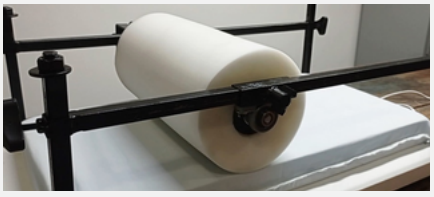
- Measurement of water evaporation enthalpy along the fiber by DSC (Differential Scanning Calorimetry)
- Easy visualization of the hydration state of the hair fiber
- Use of specialized software
- Exclusive hydration scale





Van de Graaff Sphere

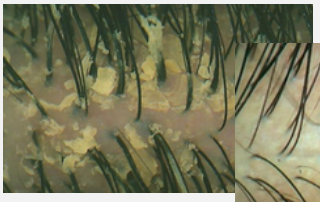
- Frizz control through static charge on hair
- Visualization of static reduction effect, applicable for demos
- Distinctive evaluation method

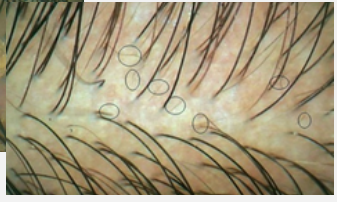




Pillow Effect

- Method developed to address consumer concerns
- Simulation of human head weight and pillow surface movement
- Measurement of hair fiber organization levels before and after a simulated night of sleep





Scalp and Hair

- Growth of New Hair Fibers
- Anti-dandruff
- Build-up effect
- Hair loss and growth stimulation
- Hair density and thickness
- Gray hair recovery
- Scalp health: flaking, dryness, erythema, and irritation signs
- Restoration of natural hair color



TECHNOLOGICAL PLATFORMS

Spectrophotometry | Fluorescence | Mechanical Properties | DSC (Differential Scanning Calorimetry) | Optical Microscopy | SEM (Scanning Electron Microscopy) | Imaging Tests | AFM (Atomic Force Microscopy) | Controlled Humidity and Temperature Chambers | Simulation of Consumer-Perceived Properties | Thermal Resistance | Anti-Breakage

Photoprotection and Antioxidation

• Cysteine oxidation (FTIR – ATR) • Tryptophan fluorescence • UV exposure simulation protocol • Radical protection factor

Anti-Pollution

• SEM – EDS (Scanning Electron Microscopy – Energy Dispersive Spectroscopy) • Environmental pollution simulation • Swimming pool and seawater simulation • Detection of heavy metals (Cu+ and Fe+) • Anti-pollution effects against cigarette smoke and black carbono • Sebum removal

Mechanical Properties

• Tensile strength • Flexibility • Reduction of combing force • Smoothness (Ring Test) • Hair detangling • Resistance to breakage from repeated brushing

Thermal and Surface Properties

• Resistance to hair dryer and flat iron • DSC (Differential Scanning Calorimetry) • Hydrophobicity • Contact angle • Hydration

Imaging Techniques

• Reduction of frizz and volume • Curl retention • Natural movement • Prevention and repair of split ends • Damage reduction • Electron microscopy • Shine in curly hair

Optical Properties

• Color durability • Anti-yellowing effect • Shine • Wash resistance

Other Properties

• Product substantivity • Drying speed and kinetics

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