



EDITORIAL

In order to reach the goal of having a better-educated, well informed society, it is necessary that advancements in technology and science are well communicated to the rest of academia, governments and institutions related to development. For this reason, it is important to set high standards for science communication and outreach, that take into account the cultural and regional context where this outreach is taking place.

Quality evaluation is one of the measures of how well a process or a set of standards work when observed in a practical context. When quality is consistently evaluated and proper channels of communication are set in place, processes can create development and innovation within a research institution, and trigger transformations that may transform a particular field and can permeate society, academy, and industry at the same time.

Our University is committed to improving society through excellence in education, innovation, and research. Part of this commitment means facing challenges and learning from them, which requires dedication, discipline, and years of hard work. Here at Universidad ECCI, our journey began 37 years ago, and for years to come we will stay true to our commitment of training competent, capable professionals, ready to overcome the academic and social challenges facing our country.

This issue of TECCIENCIA opens with the paper titled "Machining with Cutting Tool

Coated with Monolayer of HfN" from researchers from the Universidad Militar Nueva Granada. Here the authors characterize the performance of tools coated with HfN using Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM).

Energy efficiency is a very important field of research at this point in history when we are moving away from wasteful, environmentally damaging energy sources, and Universidad ECCI is at the forefront of this issue. Along with researchers from the Universidad Distrital Francisco Jose de Caldas and Universidad Sergio Arboleda, we present their work "Implementation of series resonant inverter to improve efficiency fluorescent lamps". Researchers from Universidad Antonio Nariño present their recent work on energy efficiency in a paper titled "Estimation of electricity demanded by electric vehicles based on travel distances in a residential zone". The use of alternative energy sources is explored by researchers from the Universidad Distrital Francisco José de Caldas in their paper titled "Preliminary analysis of wind power in 4 Colombian cities, and utilization estimates with urban wind turbines".

Material science research in Colombia is a rapidly growing field. In this issue we include two papers which relate to characterization of materials, the paper titled "Measurement of Complex Dielectric Permittivity in Oils from High-Voltage Transformers Using a Coaxial Probe" from Universidad Industrial de



Santander and "Biosolids and Biosolid Ashes as Input for Producing Brick-like Construction Materials" from the Universidad Santo Tomas and Universidad Nacional de Colombia.

Data and Computer Science is represented by three papers in this issue. First, social capital is studied within the Universidad ECCI using data science in the paper titled "Measurement of Social Capital through Data Mining Techniques at Universidad ECCI". In the paper titled "Origin of the Milky Way disk of satellites: collision of two disk galaxies", researchers from the Universidad Nacional de Colombia run N-body simulations to better understand the structure of our galaxy. Another closely related work by researchers from Universidad Industrial de Santander and the Universidad de los Andes in Mérida, Venezuela is "Astronomía al aire: mass media convergence in astronomy and astrophysics" where they study the impact of mass media in science outreach in Latin America.

Biomedical Engineering in Universidad ECCI is showcased by the paper titled "Analysis through dynamic temporal sequence alignment in SpO2 signals", where researchers developed a methodology to model the behavior of wave alignment in photoplethysmography in order to interpret

appropriately the behavior of oxygen saturation signal analysis.

A group of researchers from the Universidad Sergio Arboleda present their paper titled "Using *Scenedesmus* sp. for the Phycoremediation of Tannery Wastewater", where they find a significant reduction of chromium, nitrates and phosphates, and organic load as a result of a phycoremediation process.

Universidad ECCI would like to thank the following institutions for their contributions:

- Universidad Antonio Nariño
- Universidad de los Andes (Venezuela)
- Universidad Distrital Francisco José de Caldas
- Universidad Industrial de Santander
- Universidad Nacional de Colombia
- Universidad Santo Tomás
- Universidad Sergio Arboleda

Sincerely,

Fernando Arturo Soler López, MSc

Rector

Universidad ECCI