

Transfer of knowledge to the society

Our Institute developed four lines of action in this subject in its first year. Researchers from different sections of our Institute and industrial and media partners worked together in the following actions:

1) Diffusion of knowledge to the public in general using the web.

A website (www.engenhariadesuperficies.com.br) dedicated to surface engineering issues was created. Weekly, pieces of news, job and academic opportunities and events are published on our site. The site also gives visibility to our scientific production (list of papers and patents) and to our infrastructure and human resources. It has a “speak with us” section open to questions and requirements from the public, which received more than 30 contacts in the first year.

Besides that, we used popular social media pages (Slideshare, YouTube, Flickr) to publish 40 presentations prepared by our researches about surface engineering issues, an e-book about plasma nitriding, and videos and photos showing the beauty of surface engineering. Our members also produced weekly posts for our blog about surface engineering and society, including topics such as the history of surface engineering in Brazil, university-industry interaction and applications on health and textile industries.

The news and updates are communicated to our public through a monthly e-newsletter and a Twitter account.

Finally, our Institute had a constant presence on sites and newsletters of Industry Federations (Simplas, Simecs, CIC), universities (UCS, UFRGS, Inpe) and the CNPq site, as well as some mentions on regional newspapers and magazines dedicated to the industry. In total, 70 pieces of news mentioned our Institute and the surface engineering.

All these actions contributed significantly to generate a high volume of trustable information about surface engineering on the web in Portuguese, creating a virtuous circle of dissemination, searches and visibility.

Our content received up-to-date more than 68.000 views from the public. Our website conquered the first place in Google’s searches with the keywords “engenharia de superficies” (the Portuguese translation of “surface engineering”).



2) Transfer of knowledge to the industrial sector.

A program of surface engineering training for human resources of the industry is being accomplished by our Institute in partnership with the Federation of the Metalworking Industries of Caxias do Sul (Simecs). Our researchers and partners gave 4 technical talks on surface engineering topics (tribology, coatings, plasma nitriding, nanotechnology), reaching 260 people. Our Institute also organized a 14 classes course (**Introduction to wear and friction**) given by prof. Amilton Sinatora (USP) at UCS, for both engineering students and Simecs associates.

Our Institute also acted in partnership with the Federation of Plastic Industries of Caxias do Sul (Simplas) for the dissemination of surface engineering. Two talks were given for more than 250 associates. Besides, our Institute was present with a stand at Plastech, one of the major Brazilian fairs of the plastic industry (18.000 participants).

At USP, our Institute offered two short courses given by external specialists. Each course attracted 40 people from both the industry and the university:

- **Principles of Surface Texturing** Prof. Izhak Etsion (Technion) at the Surface Phenomena Laboratory, University of São Paulo.
- **Surface Finish Metrology** organized with the Center of Excellence of Taylor Hobson (United Kingdom) at the Surface Phenomena Laboratory, University of São Paulo.

Besides that, 3 meetings were organized by our Institute to promote university-industry debate and action:

- **Solar-grade silicon development meeting** (November 2009, at Unicamp).

- **Tribological challenges on the next generation of flex-fuel engines** (August and December 2009, at Mahle headquarters and at USP).

Our environment also promoted the creation, in June 2009, of a spin-off company dedicated to plasma surface engineering. Plasmar Tecnologia was established by researchers and students from the UCS section of our Institute. Since its creation, it has been providing high technology surface treatments to the metalworking companies at Caxias do Sul. Presently, Plasmar is also working on R&D projects for the gas and oil industry.

Finally, there are many contracts between our laboratories and industries like Petrobras, Braskem, Frasle, Nanovetores and Villares for R&D activities.



3) Open-lab days for young students.

Many laboratories (UFRGS, UDESC, UCS, and PUC-RIO) had a special day where they were open for high-schools student's visits, as an effort to convince young people to follow a profession in science or engineering.



4) Organization of world class scientific meetings in Brazil.

The institute was also involved in the organization of:

- **Simposium Protective Coatings: Surface Engineering** at the International Conferences on Advanced Materials, September 2009, Rio de Janeiro (Chairs: Fernando Lázaro Freire Jr, Y.W. Chung and Israel J.R. Baumvol)
- **Brazil-Argentina School on Nanostructured Coatings**, collaboration with CBAN (Centro Brasil-Argentina de Nanotecnologia) at PUC-Rio, December 2009 (organizer: Fernando Lázaro Freire Jr.)