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Web Site Review

The Macrogalleria

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The Macrogalleria. **URL: http://www.psrc.usm.edu/macrog**

The Macrogalleria, a "cyberworld of polymer fun," was created by Mark Michalovic, Kelly Anderson, Greg Brust, Lon J. Mathias, and Krzysztof Matyjaszewski at the University of Southern Mississippi, and funded by POLYED (the joint education committee of the American Chemical Society Divisions of Polymer Chemistry and Polymeric Materials: Science and Engineering) and General Electric Corporation. The authors seek to provide "working knowledge of polymers and related concepts to students of all levels, from K - 12 to graduate-level and the general public as well, and to do so on multiple levels...." Overall, the site does an admirable job of achieving this goal. The site consists of five levels divided by topic.
Level One, *Polymers are Everywhere,* shows the reader the polymer composition of selected products from various stores in a virtual shopping galleria. The text includes pictures of the products, identifies the polymer (s) in the product, and contains a significant number of hyperlinks to more detailed discussions about these polymers in Level Two.

Level Two, *Polymers Up Close and Personal,* contains information on 35 specific polymers, including a general discussion, fundamentals of synthesis (monomer and polymerization process), morphology, and melting and glass-transition-temperature data. A collection of all these data into tabular form at some point would make comparison and trend deduction much more facile. Line structures are given for polymers discussed on this Level. In addition, most can also be viewed as Chime (MDL Information Systems) graphics that can be rotated by clicking on the molecule and dragging the mouse. Allowing the site user to view these Chime graphics side-by-side would allow for easier comparison of polymer structure. Should it be necessary to acquire the Chime plug-in, a hyperlink to a Website from which it may be downloaded is provided. Fundamental polymer concepts introduced in this level are hyperlinked to relevant conceptual discussions in Level Three.

Level Three, *How They Work,* is an extensive primer on the basics of polymer physical chemistry and structure. Among the twenty topics discussed on this Level are crosslinking, crystallinity, and tacticity. There are many structural pictures to assist in relating polymer structure and properties.

Level Four, *Makin' Polymers,* presents the basics of polymer synthesis. A basic introduction is presented, along with 16 discussions of specific processes (Ziegler-Natta or anionic vinyl polymerization) of polymers. The level of detail here is excellent, especially in the mechanistic discussion of Ziegler-Natta polymerization.

Level Five, *Getting Polymers to Talk,* was under construction at the time of my visit. This Level discusses six instrumental techniques used in polymer characterization: size exclusion chromatography, differential scanning calorimetry, dilute solution viscometry, NMR, MALDI-MS (Matrix-Assisted Laser Desorption Ionisation MS), and IR. In most cases, the fundamental theory of the technique is explained in the context of polymer analysis. The NMR and IR discussions fail to explain how these techniques are applied to polymer characterization. If these topics can be brought up to the level of the other four in this section, Level Five will provide an excellent fundamental discussion of polymer characterization techniques.

The Macrogalleria also contains a glossary of 36 keywords. This glossary is accessed by frequent hypertext links throughout the five levels. The site also contains a good polymer bibliography, and a collection of links to other polymer web sites.

The site contained a few typographical errors, as expected for a project under construction. The language level is friendly and fairly simple, with a sense of humor that occasionally borders on the pleasantly sarcastic. Overall, the site is highly instructive and easily navigated. The material is presented with appealing real-world relevance. It is chock-full of useful information for beginning students of polymer chemistry, so much so that a built-in search engine would be a great asset to locating information within this site. This site should be among the bookmarks of anyone interested in a fairly complete primer on introductory polymer chemistry.