

FROM THE EDITOR



Hi-Fi to Wi-Fi and Beyond

As another year draws to a close, I am caught in a reflective mood, pondering on all these years of steady, incremental progress interspersed with radical breakthroughs in technology. When I was a kid, radio provided the main connectivity to the outside world. These were vacuum-tube fitted behemoths and size certainly mattered in terms of the neighborhood bragging rights—especially as these radios provided the centerpiece in the living room around which the entire family (and often, friends) gathered in the evenings. The first “radical” development that I recall was the transistor radio. All of a sudden, one had access to information “on the go” and the device miniaturization trend truly began here. This technology transition from stationary to mobile devices is a recurring theme as seen below.

The music industry provides striking examples of technology progressions. We have seen the switch from 78 RPM records to their longer-playing 45 RPM and 33 $\frac{1}{3}$ RPM counterparts. The turntable devices for playing these records were initially displaced by cassette tape and 8-track players, and now by compact discs or CDs. For music storage and reproduction I used to use (reel-to-reel) magnetic tape recorders but now we “burn” CDs. These developments have involved both incremental advances (*e.g.*, from reel-to-reel machines to cassette recorders/players) as well as radical (“disruptive technology”) breakthroughs as in the switch from analog to digital formats. The music revolution is continuing and the sorry truth is that we are making a lot more progress on the technology front than on the fierce legal disputes over turf battles surrounding downloading of music files, copy protection, and the like.

In 2002, wireless data became a reality. Wi-Fi (or “wireless fidelity”) networks are now widely available not only in offices and homes but also in “hot spots” at airports, hotels, and even coffeehouses. Thus the day is dawning when our laptop or handheld devices will seamlessly use the best available wireless connection anytime anywhere. In fact the recent surge in demand has prompted the Federal Communications Commission to set aside more spectrum for Wi-Fi. Business models are also evolving to convert this initially grass-roots, techies-driven phenomenon into a bona fide, billable business. The billion-dollar rollout of high-speed wireless networks will also likely bring about the confluence of Wi-Fi and the so-called Third Generation or 3G wireless phone technologies. Will all these mean that the desktop PC system will soon go the way of the dinosaur?

These technology developments were enabled by the equally revolutionary advances in materials. Diamond is one such unique material that is featured in the pages that follow. Many thanks to the Guest Editor, Greg Swain, for his assistance in putting together this special issue. Stay tuned.

Raj K.

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Editor

The Electrochemical Society *Interface* (USPS 010-327) (ISSN 1064-8208) is published quarterly by The Electrochemical Society, Inc., at 65 South Main Street, Pennington, NJ 08534-2839 USA. Subscription to members as part of membership service; subscription to nonmembers \$40.00 plus \$5.00 for postage outside U.S. Single copies \$5.00 to members; \$10.00 to nonmembers. © Copyright 2003 by The Electrochemical Society, Inc. Periodicals postage at Pennington, New Jersey, and at additional mailing offices. POSTMASTER: Send address changes to The Electrochemical Society, Inc., 65 South Main Street, Pennington, NJ 08534-2839.

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The Electrochemical Society

INTERFACE

Published by:

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Pennington, NJ 08534-2839 USA
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PRODUCTION NOTES

Design Consultant:

O&Y Design,
Trenton, NJ

Printed by:

Cummings Printing Co.
Hooksett, NH