



## **RSOFT Design Group Announces BandSOLVE Speed Enhancements**

### *Version 1.2 Accelerates Photonic Band Structure Calculations*

**August 20, 2003 — Ossining, NY** — RSOFT Design Group, Inc. ([www.rsoftdesign.com](http://www.rsoftdesign.com)), the market leader in optical design, simulation, and optimization software, today announced *BandSOLVE*<sup>™</sup> 1.2, the latest release of its photonic band structure tool. *BandSOLVE* is the only commercially available design tool to automate and simplify the calculation of photonic band structures for all photonic crystal (PC) devices. The tool handles a wide range of PC components, including 2D and 3D PC slabs and waveguides, 2D and 3D cavity problems, and photonic crystal fibers.

*BandSOLVE* 1.2 introduces two new simulation options providing greater speed in calculation: inversion symmetry and mode-seeding. Most useful photonic crystal structures display inversion symmetry — if all space is inverted, the refractive index distribution is unchanged. This seemingly simple symmetry has a direct impact on the eigenmodes of the photonic crystal, in that their expansion in plane waves is real, instead of complex. New code that takes advantage of this difference can now produce identical results in as little as 45 percent of the time previously required. For large 3D problems, this time savings is a huge advantage to the user. *BandSOLVE* 1.2 supports inversion symmetry in one, two, or three dimensions and activation of the feature requires only a single switch.

Similar or even better time efficiencies are realizable using another new addition to *BandSOLVE* 1.2: mode-reseeding. In band structure work, engineers are invariably required to solve numerous similar problems. For instance, in constructing a single band structure, an eigenvalue problem is solved for many wave vectors within the Brillouin zone. If the various wave vectors are closely spaced, the modal solutions are very similar in form. Therefore, the results at one wave vector often represent a good first guess, or seed, for the solutions at the next wave vector. Reseeding is remarkably effective, providing typical speed-ups of better than 100 percent. Moreover, the closer the scan in wave vector, the greater the improvement. High-resolution scans actually finish faster than low resolution ones. As usual in *BandSOLVE*, all the work is done for the user — mode seeding is activated with a single mouse click.

*BandSOLVE* 1.2 includes numerous other enhancements, including new measurements of polarization fractions and the McIsaac mode class for photonic crystal fibers, and facilities for more flexible organization of measurements. Considerable attention has been made to improving *BandSOLVE*'s unique dual-mode interface to the FDTD engine for calculating metallic and dispersive band structures. Finally, an enhanced *ModeVIEWER* provides more powerful data browsing and new options for exporting graphs and mode profiles in a variety of image and animation formats.

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**About RSoft Design Group, Inc.**

Offering a comprehensive suite of design and business analysis software solutions to the telecommunications and photonics industries, RSoft Design Group is the only company that provides a full range of simulation and planning software and services across the entire component to network-level hierarchy. The company's award-winning products are used by researchers, manufacturers, systems integrators, and service providers to address design challenges ranging from the physics of component design to the business implications of planning wired and wireless networks. RSoft Design Group, Inc. is a privately held corporation with software development offices in New York, New Jersey, Illinois and Silicon Valley, and global marketing operations in the Pacific Rim, Europe, and the Middle East. For more information, visit [www.rsoftdesign.com](http://www.rsoftdesign.com).

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