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B. S. E., Duke University, 1979
S. M., Massachusetts Institute of Technology, 1982
Ph.D., Massachusetts Institute of Technology, 1985

Postdoctoral Investigator, 1985,
Department of Civil Engineering,
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Postdoctoral Fellow, 1985–1986;
Postdoctoral Investigator, 1986–1987;
Assistant Scientist, 1987–1991;
Associate Scientist, 1991–2000, tenure awarded, 1995;
Senior Scientist, 2000–present,
Department of Physical Oceanography,
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Member, American Geophysical Union, American Meteorological Society, American Physical Society.

Fellow, American Physical Society, 2001.

Research Interests: Theoretical, numerical and laboratory studies in geophysical fluid dynamics: stratified flows, nonlinear internal waves and tides, hydraulic phenomena, abyssal circulation in the presence of topography, geological fluid dynamics, bio-fluid dynamics.

Author or co-author of 64 refereed scientific publications.

Refereed Publications:

Helfrich, K. R., W. K. Melville, and J. W. Miles, 1984. On interfacial solitary waves over variable topography. *Journal of Fluid Mechanics*, **149**, 305–317.

Helfrich, K. R., and W. K. Melville, 1986. On long nonlinear internal waves over slope–shelf topography. *Journal of Fluid Mechanics*, **167**, 285–308.

Whitehead, J. A., and K. R. Helfrich, 1986. The Korteweg–de Vries equation from laboratory conduit and magma migration equations. *Geophysical Research Letters*, **13**, 545–546.

Melville, W. K., and K. R. Helfrich, 1987. Transcritical two-layer flow over topography. *Journal of Fluid Mechanics*, **178**, 31–52.

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Whitehead, J. A., and K. R. Helfrich, 1988. Wave transport of deep mantle material. *Nature*, **336**, 59–61.

- Helfrich, K. R., and J. A. Whitehead, 1989. Solitary waves on conduits of buoyant fluid in a more viscous fluid. *Geophysical and Astrophysical Fluid Dynamics*, **51**, 35–52.
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- Helfrich, K. R., 1994. Thermals with background rotation and stratification. *Journal of Fluid Mechanics*, **259**, 265–280.
- Kim, S. L., L. S. Mullineaux, and K. R. Helfrich, 1994. Larval dispersal via entrainment into hydrothermal vent plumes. *Journal of Geophysical Research*, **99**(C6), 12655–12665.
- Grimshaw, R. H. J., and K. R. Helfrich, 1995. Solitary waves on two-dimensional slab conduits of buoyant fluid in a more viscous fluid. *Geophysical and Astrophysical Fluid Dynamics*, **79**, 223–238.
- Helfrich, K. R., 1995. Thermo-viscous fingering of flow in a thin gap: A model of magma flow in dikes and fissures. *Journal of Fluid Mechanics*, **305**, 219–238.
- Helfrich, K. R., 1995. Time-dependent two-layer hydraulic exchange flows. *Journal of Physical Oceanography*, **25**(3), 359–373.
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