

1. Record Nr.	UNINA9910220040103321
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Titolo	Linking Optical and Chemical Properties of Dissolved Organic Matter in Natural Waters
Pubbl/distr/stampa	Frontiers Media SA, 2017
Descrizione fisica	1 online resource (242 p.)
Collana	Frontiers Research Topics
Soggetti	Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>A substantial increase in the number of studies using the optical properties (absorbance and fluorescence) of dissolved organic matter (DOM) as a proxy for its chemical properties in estuaries and the coastal and open ocean has occurred during the last decade. We are making progress on finding the actual chemical compounds or phenomena responsible for DOM's optical properties. Ultrahigh resolution mass spectrometry, in particular, has made important progress in making the key connections between optics and chemistry. But serious questions remain and the last major special issue on DOM optics and chemistry occurred nearly 10 years ago. Controversies remain from the non-specific optical properties of DOM that are not linked to discrete sources, and sometimes provide conflicting information. The use of optics, which is relatively easier to employ in synoptic and high resolution sampling to determine chemistry, is a critical connection to make and can lead to major advances in our understanding of organic matter cycling in all aquatic ecosystems. The contentions and controversies raised by our poor understanding of the linkages between optics and chemistry of DOM are bottlenecks that need to be addressed and overcome.</p>