

Call for Papers
IEEE Journal on Selected Areas in Communications
“Next-Generation Spectrum-Efficient and Elastic Optical Transport Networks”

Improving capacity utilization of the optical transport network has been an important research challenge for many years. Extensive research efforts have been devoted to developing the approaches of grooming subwavelength traffic demand onto large wavelength capacity pipes. These efforts, however, only focus on efficiently utilizing the capacity pipes, without addressing the issue of fixed ITU-T grid and frequency spacing in the DWDM layer. Under the fixed frequency spacing, optical spectrum is often over-provisioned for a low-rate optical channel, and this inefficiency becomes even worse when more advanced modulation formats are employed. Advanced optical transmission and networking techniques are desired to provide flexibilities for optical channel spectrum allocation and to develop the related network control system so as to cater to the bandwidth elasticity of Internet traffic and improve fiber optical spectral usage.

Significant attention has been given to develop spectrum-efficient and flexible optical transport networks in both academia and industry in the past few years, and currently there are many research efforts underway targeting at the development of appropriate solutions for future dynamic elastic and scalable photonic infrastructures and network architectures, efficient new algorithms that determine how the traffic demands can be matched to resources in an optimized way, and a more flexible control and management plane. The purpose of this special issue is to gather articles that present recent advances in the field. We solicit original contributions in (but not limited to) the following categories:

- Spectrum-efficient elastic optical transport network architecture
- Bit-rate flexible and spectrum-efficient optical transmission techniques, and their impact on networking
- New-generation elastic and spectrum-flexible reconfigurable optical add/drop multiplexer (ROADM)
- Spectrum-efficient optical transport network control planes, such as extension to the Generalized Multiprotocol Label Switching (GMPLS) protocols
- Lightpath routing, optical spectrum, modulation format and bit-rate allocation algorithms
- Time-dependent traffic demand support by applying the bandwidth elasticity of the optical OFDM transmission technique
- New protocol development and performance analysis for spectrum-efficient optical transport networks
- Cost-efficiency issues for spectrum and/or bit-rate flexible optical transport networks
- Spectrum de-fragmentation issues in spectrum flexible optical transport networks
- Energy-consumption issues of elastic and spectrum-efficient optical transport networks
- Performance monitoring of spectrum-efficient optical transport networks
- Subwavelength traffic grooming approaches in spectrum-efficient optical transport networks
- Testbeds and applications of spectrum-efficient optical transport networks

Prospective authors should follow the IEEE JSAC manuscript format described in the Information for Authors at <http://www.jsac.ucsd.edu/Guidelines/info.html>. Prior to submitting their papers for review, authors should make sure that they understand and agree to adhere to the over-length page charge policy presented in the JSAC guidelines. Authors should submit a PDF version of their complete manuscript to <http://edas.info> according to the following timetable:

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Notification of acceptance: June 1, 2012
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