

## MID INFRARED OPTICAL FIBERS FOR FIBER LASERS: FLUORIDE GLASS FIBERS

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Since the demonstration of the first fibers laser in 1964 by Stnizer et al., fiber laser have attracted increasing interest among the scientific community. Compared to other laser technologies, such as solid state, semiconductor and gas lasers, fiber lasers exhibit many interesting advantages. They are compact and have high efficiency, excellent beam quality and good heat dissipation. Fiber laser are being used in many industrial and high technology applications, such as automotive industry (drilling, cutting and welding.); medicine, aerospace, spectroscopy and sensing. Two research axes have been intensively investigated, the output power scaling and the development of new laser lines. As far as output power scaling is concerned, high power fiber laser, kilo watts range have been already demonstrated, using rare-earth silica doped fibers. They are already used in industrial applications. While, intensive development still ongoing to extend the fiber lasers wavelength range by investigating different glass materials host, such as fluoride, tellurite, chalcogenide and phosphate glasses. Unfortunately, there is no single host material that can fulfill all application needs. Scientist and engineers have to choose the right materials for the right application. The ideal candidate has to combine the ability to be drawn into high quality single mode optical fiber, have a high solubility of rare-earth ions and the ability to be cleaved and spliced. The host material should be transparent at both pumping and emission wavelengths along with the ability to write Bragg Gratings in the fiber to tailor the emission characteristics. The presentation will report the latest development of fluoride glasses and fibers technology.

### Biography

Mohammed Saad has more than 35 years of experience in both university and industrial research fields. He has over 70 publications and 25 invited talks in international conferences. In 1986, he obtained his PhD in Fluoride Glasses and Fibers, from Rennes University in France. In 2003, he founded Irphotonics in Montreal (Canada), a Leader in Fluoride Glass Fibers Technology. In 2013, Irphotonics has been acquired by Thorlabs and since then, he is a Senior Scientist at Thorlabs, Inc. in NJ, USA. He is a Senior Member of SPIE and OSA. He is Member of technical committee of many international conferences. His research interests are Mid Infrared Optical fibers for Fiber Lasers: Fluoride glass Fibers.

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