

**9<sup>th</sup> October, 2015 - 15:00**  
 CFEL-bldg. 99, seminar room II (EG0.078)

## Takunori Taira

Laser Research Center, Institute for Molecular Science,  
 Okazaki, Japan

### Large aperture PPMgLN toward giant micro-photonics

Micro-domain and boundary controlled photonic devices by electro-magnetic fields allow us the giant effects in the conventional solid-state photonic medium such as the transparent ceramics for laser and periodically poled Mg-doped LiNbO<sub>3</sub> (PPMgLN) for quasi phase matching (QPM). In this presentation, I'd like to discuss the Giant Micro-photonics from the point of view highly efficiency and functional Mid-IR generation by using our >10mm PPMgLN. J-class OPO with >70% slope efficiency high-energy ns-pulses generation has been demonstrated. In addition, coherent X-ray and THz waves could be extended by using PPMgLN.

Fig. 1: Year trends of PPMgLN thickness and OPO/OPG output powers

#### Acknowledgement

Dr. H. Ishizuki, Prof. B. Boulanger, Prof. M. Fujii, Prof. F. Krausz, Prof. J. Biegert, Dr. H. Minamide

#### References

- [1] H. Ishizuki, I. Shoji, and T. Taira, Appl. Phys. Lett., **82**, 4062 (2003).
- [2] H. Ishizuki and T. Taira, Opt. Lett., **30**, 2918 (2005).
- [3] J. Saikawa, T. Taira et al., Opt. Lett., **31**, 3149 (2006)
- [4] J. Saikawa, T. Taira et al., Opt. Lett., **32**, 2996 (2007).
- [5] J. Saikawa, T. Taira et al., Opt. Lett., **33**, 1699 (2008).
- [6] M. Miyazaki, T. Taira, et al.: Phys. Chem. Chem. Phys., **11**, 6098 (2009).
- [7] H. Ishizuki and T. Taira, Opt. Express **20**, 20002 (2012).
- [8] X. Gu, T. Taira, et al.: Opt. Express, **17**, 62 (2009).
- [9] Y. Deng, T. Taira, et al., Opt. Lett., **37**, 4973 (2012).
- [10] K. Nawata, T. Taira, et al., Appl. Phys. Lett., **104**, 091125 (2014).

