

**Applicant:** 黃衍介

**Eligibility:**

- Affiliation: Institute of Photonics Tech/EE Department, NTHU
- Research: I have been working on THz nonlinear optics and vacuum electronics since 1990.

**Proposal Category:** A

**Service Requests to TOP Center:**

- Teaching lab training (done): 孔祥龍、劉峰麒、陳傑儒、彭珞豪、王傑立 (15k NT paid to the TOP)
- Optical coatings: AR coating on KTP crystals, AR coating on lithium niobate crystals (35K NT to be paid to TOP by Oct.)
- A computer account (50k NT will be paid to TOP by Nov.)

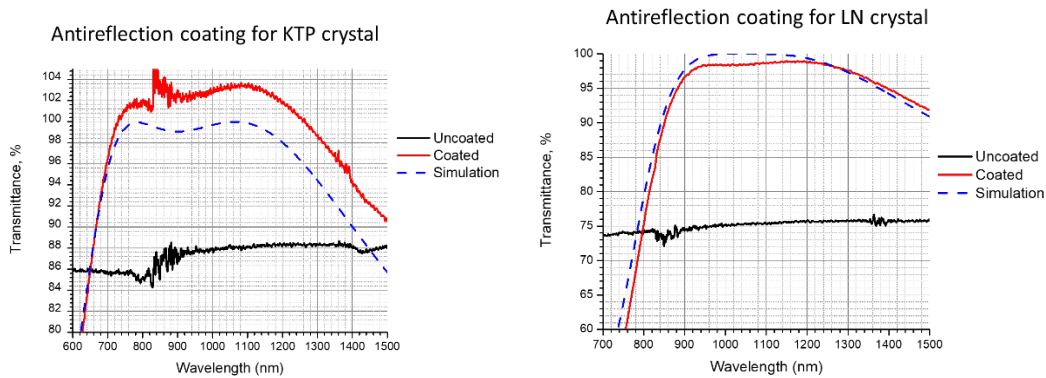
**Budget Request to TOP Center:** 100k NT

**Results:**

- Service fee paid to the teaching-lab training

清華大學計劃收入查詢系統								
查詢條件 <input type="button" value="匯出"/> 年度 <input type="text" value="109"/> 計畫 <input type="text" value="109H6066NC"/> 名稱 兆赫光電研究中心技術服務收入								
查詢結果								
收據日期	印刷序號	收據號碼	繳款人	金額	事由	收款	備註	
1090901	10922498	0004916	國立臺灣科技大學 04126516	2,000	7月份晶圓切割儀器使用費	已收	109H6066NC	
1090901	10922499	0004917	國立臺灣科技大學 04126516	4,000	7月份晶圓切割儀器使用費	已收	109H6066NC	
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1090831	10922281	0004886	10883036N6	9,000	兆赫光電中心技術服務	已收	109H6066NC	
1090831	10922282	0004887	10883036N6	6,000	兆赫光電中心技術服務	已收	109H6066NC	
1090811	10920439	0004537	國立臺灣科技大學 04126516	1,200	6月份晶圓切割儀器使用費	已收	109H6066NC	
1090811	10920440	0004538	國立臺灣科技大學 04126516	1,200	7月份晶圓切割儀器使用費	已收	109H6066NC	
1090706	10916383	0003476	逢甲大學 52005505	5,200	6月份晶圓切割技術服務	已收	109H6066NC	
1090619	10915102	0003227	中國砂輪企業股份有限公司 03089008	50,000	兆赫光電研究中心技術服務收入	已收	109H6066NC	
1090619	10915103	0003228	中國砂輪企業股份有限公司 03089008	40,000	兆赫光電研究中心技術服務收入	已收	109H6066NC	

- Coating service provided by the TOP



(To be further updated)

**Proposal Category:** B (\*a template only, no budget request from Huang)

**Proposed Co-Op Service Facility:** 120 kV transmission electron microscope (TEM)

**Description of Services:** A TEM is a modern tool to view nano-materials. My group will be setting up a Jeol JEM 1200EXII TEM by the end of this year and make it available for service to our members. This TEM will be located in Rm. 402 of the HOPE Laboratory, NTHU Photonics Research Center.



**Budget Request:** 0 NT (for setting up air conditioner, chiller, gas/water conduits, equipment transportation etc.)

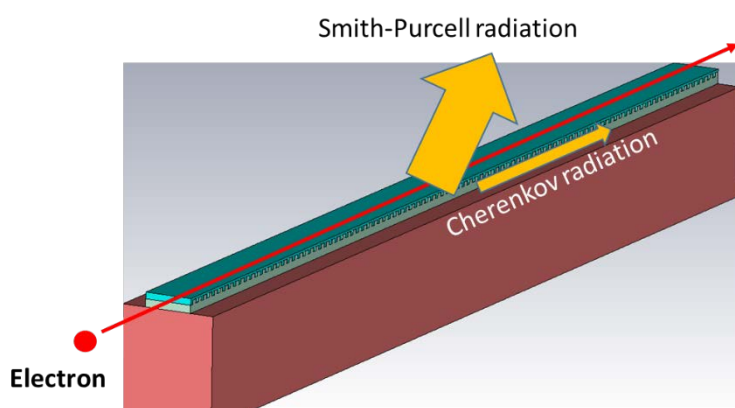
**Result:** to be updated

## Proposal Category: C

**Team Members:** 黃衍介、王威智、陳家祥

**Joint Project:** Smith-Purcell/Cherenkov laser

**Project Description:** This is a joint effort to generate coherent IR and THz radiations from keV electron pumped micro and nano photonics structures. The radiation mechanism is so-called Smith-Purcell radiation above a grating structure or Cherenkov radiation inside a dielectric. Prof. 陳家祥 will be responsible for establishing the CST simulation tools, Prof. 王威智 will be responsible for fabricating the structures, and Prof. Yen-Chieh Huang will be responsible for conducting the experiment and generating and radiations. We expect this collaboration will last a few years. In the next 6-12 months, we will be establishing the infrastructure for this collaboration.



For my part, I will build a >100 keV electron beam line with a pulsed current > 1mA in the next few months. On the beam pipe, we will install beam control elements, such as dipole, quadruple magnets and steering coils, along with a large vacuum chamber for radiation generation from micro- and nano-structure. Since we plan a broad radiation band covering IR and THz, sensitive detectors, such as PMT, Golay cell, and bolometer etc., are among our considerations. Spectral measurement is crucial to confirm laser radiation. We are building a scanning Michelson interferometer for this purpose.

**Budget Request:** 100k NT

**Result:** to be updated