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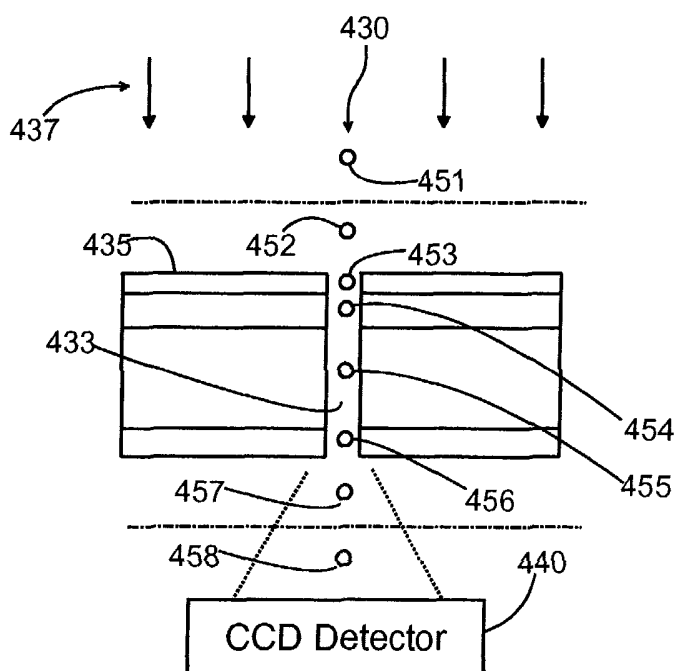
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Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS,

[Continued on next page]

(54) Title: SURFACE PLASMON ENHANCED ILLUMINATION SYSTEM



(57) Abstract: Methods and apparatus for producing small, bright nanometric light sources from apertures that are smaller than the wavelength of the emitted light. Light (437) is directed at a surface layer (435) of metal onto a light barrier structure that includes one or more apertures each of which directs a small spot of light onto a target. The incident light excites surface plasmons (452) "electron density fluctuations" in the top metal surface layer and this energy couples through the apertures to the opposing surface where it is emitted as light from the apertures of from the rims of the apertures. Means are employed to prevent or severely limit the extent to which surface plasmons are induced on the surface at the aperture exit, thereby constraining the resulting emissions to small target areas. The resulting small spot illumination may be used to increase the resolution, photolithographic processes, and storage capacity of microscopes.



MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

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International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C25D 11/02; H01L 27/12; G01N 33/543

US CL : 436/518; 257/32; 205/122

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 436/518; 257/32; 205/122

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
USPTO APS EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,180,415 B1 (SCHULTZ et al) 30 January 2001 (30.01.2001), see entire document.	1-90
Y	US 5,510,628 A (GEORGER, JR. et al) 23 April 1996 (23.04.1996), see entire document.	1-90
Y	US 5,888,371 A (QUATE) 30 March 1999 (30.03.1999), see entire document.	1,3,31,33,62,66

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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