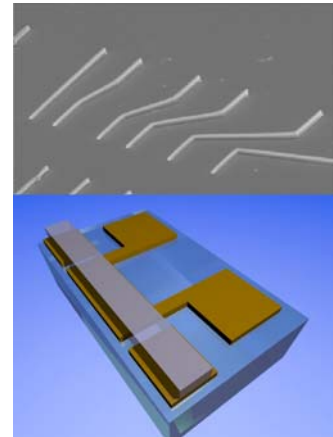


Smaller and Smarter Photonic Components ? Go plasmonic !

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The European Commission 6 Framework Programme project *Polymer-based Nanoplasmonic Components and Devices* (PLASMOCOM, <http://www.plasmocom.org>) has been launched on 1 September 2006. This Specific Targeted Research Project (STREP) in Information Society Technologies Priority brings together leading European laboratories in the field of plasmonics under the umbrella of a common task: to develop and implement novel concepts for micro- and nano-scale dynamic and active photonic components based on metal/polymer nanostructures. By utilizing the unique properties of metallic systems that allow both optical and electrical signals to be transmitted along the same metallic circuitry, this approach will provide a route to innovative integrated components combining photonics and electronics on the same chip.



The images are courtesy of C Reinhardt, Laser Zentrum Hannover eV.

The proposed technology makes use of surface plasmon polaritons—electromagnetic excitations that propagate along and are bound to an interface between a metal and a dielectric. These surface electromagnetic waves enable the manipulation of optical signals on a sub-wavelength scale and, therefore, are uniquely suitable for applications in integrated photonics circuits and the development of electronically-driven and all-optical photonic devices. Advances in this field will pave the way to a novel class of scalable photonic components which are compatible with current photonic and electronic technologies and create a new class of hybrid optical/electronic devices.

The project target is to establish a new technological platform and create the technology to integrate nanophotonic components with enhanced functionality for optical signal processing, on-electronic-chip optical interconnects and broadband optical applications. PLASMOCOM will create new critical knowledge on the fabrication and performance of dynamic and active nanophotonic devices, demonstrate new devices with enhanced parameters (inexpensive fabrication, smaller size, enhanced dynamic and active functionality having both lower electric power consumption and intensity of control light) and will contribute to Europe's competitiveness and leadership in the miniaturization of photonic components and integrated photonic circuits.

The PLASMOCOM consortium is co-ordinated by Professor A V Zayats (The Queen's University of Belfast, UK) and includes research groups led by Professor B N Chichkov (Laser Zentrum Hannover eV, Germany), Professor S I Bozhevolnyi (Aalborg University, Denmark) and Professor A Dereux (University of Bourgogne, Dijon, France) as well as the planar optics specialist, SILIOS Technologies (France).

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