بيان بالبحث رقم (٢)

Title	**Synthesis and Ink-Jet Printing of Highly Luminescing Silicon Nanoparticles Ink for Printable Electronics**
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Abstract:

The formation of stable colloidal dispersions of silicon nanoparticles (Si-NPs) is essential for the manufacturing of silicon based electronic and optoelectronic devices using cost-effective printing technologies. However, the development of Si-NPs based printable electronics has so far been hampered by the lack of long-term stability, low production rate and poor optical properties of Si-NPs ink. In this paper, we synthesized Si-NPs in a gas phase microwave plasma reactor with very high production rate, which were later treated to form a stable colloidal dispersion. These particles can be readily dispersed in a variety of organic solvents and the dispersion is stable for months. The particles show excellent optical properties (quantum yields of about 15%) and long-term photoluminescence (PL) stability. The stable ink containing functionalized Si-NPs was successfully used to print structures on glass substrates by ink-jet printing. The homogeneity and uniformity of large-area printed filmwas investigated using photoluminescence (PL) mapping.

الملخص بالعربي :

لقد تم في هذا البحث تحضير أحبار ذات كفاءة عالية من جسيمات السليكون النانونية . ولقد تم إستخدام الطابعة النانونية لطباعة هذه الأحبار علي سطوح مختلفة. ونظراً للخواص الضوئية الممتازة لهذه الجسيمات والتي تتغير بتغير أحجامها تحت تأثير الضوء الفوق البنفسجي ، فقد تم تحضير أفلام ذات خواص سطحية وضوئية ممتازة ويمكن أن تستخدم في العديد من التطبيقات .