



**The Chinese University of Hong Kong**  
**Non-confidential Abstract of Technology Disclosure**

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**Title:**

**Synthesis by Selectively Rupturing Hydrogen from Adsorbed Molecules with Hydrogen Collision**

**CUHK Ref. No.:**

01/SCI/090

**Inventor:**

Professor Raymund KWOK, Department of Chemistry

**Patent Status:**

US Patent Pending

**Non-confidential abstract:**

The invention exploits the concept of kinematics in particle collision in chemical synthesis, concept which has not been appreciated by synthetic chemists. More specifically, the invention discloses a method for polymer film production and polymer surface modification using hydrogen with a proper kinetic energy. In one of the preferred embodiments of the invention, we put docosanoic acid molecules,  $\text{CH}_3(\text{CH}_2)_{20}\text{COOH}$ , on a solid surface, used our invented technique to selectively break C-H bonds and thereby to form a polymer film with a specific and pure COOH functionality. Similarly we can also selectively break C-H bonds of the surface of a polymer substrate and thereby graft a chemical functional moiety or another polymer unit to the polymer substrate. We have already collected sufficient technical data to demonstrate the feasibility of the method, to specify the reaction attributes in the method, to illustrate the properties of the reaction products, and to show the applicability of the method.

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