EG60411 Bio	omaterial Science
	Toshiharu Enomae
Professor, PhD	, Paper Device and Eco-friendly materials

Biomaterial Science (2015 Schedule)				
#	Date	Content		
1	10/6	History of papermaking		
2	10/13	Pulps – Beating and fiber properties		
3	10/20	Pulps – Additives and functions		
4	10/27	Papermaking processes & interfiber bonding		
5	11/10	Paper- Structural properties		
6	11/17	Paper- Surface properties		
7	11/24	Paper–Wetting and absorption properties		
8	12/1	Paper- Mechanical and optical properties		
9	12/8	Polysaccharide chemistry by Assoc Prof Akiko Nakagawa		
10	12/15	Recent research of paper science and technology		
11	12/22	Examination		



























## Prospective future with Paper devices and Eco-friendly materials

## Toshiharu Enomae Professor

Faculty of Life and Environmental Sciences University of Tsukuba , JAPAN

## Research topics

- Laboratory of Paper Devices and Eco-friendly Materials
- Paper device (Paper in future)
- Paper electronics
  - Paper-based medical check-up sensor
  - Energy supply device
  - Paper-based bioassay system
- Paper cultural heritage (Paper in past)
   Conservation Science
- Fundamental papermaking technology (Paper at present)
  - Paper coating, paper physics and chemistry, etc.

## Development of Paper-based medical check-up sensor and technology of liquid transport in a micro-channel







Preparation of sensor paper							
	Advantage of paper ar	nd improvement					
<ul> <li>Cheap, disposable, portable, and flexible</li> <li>Cotton linter pulp→ almost no impurities</li> <li>Porous → micro-channel to transport liquid</li> <li>Smaller pore size → Less ink bleeding</li> </ul>							
#	Beating, revolutions-PFI mill	Density, g/cm³					
1	10000	0.568					
2	20000	0.622					
	20000	0.041					
3	30000	0.641					
3	30000	0.641					













